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[ORIGINAL COMMUNICATION.]

A DEVICE TO SEPARATE ETHEREAL FROM AQUEOUS LIQUIDS.*

BY WILLIAM P. DE FOREST, BROOKLYN, N. Y.

ANY bottle, large enough to hold a little more than all the liquid, may be fitted with a rubber cork, through which pass two glass tubes, one long enough to go to the bottom of the bottle, the other just passing through the cork, each projecting outside about an inch, with a piece of rubber tubing attached. Pour the liquid into the bottle, put a pinchcock on each rubber tube, place the cork in the neck of the bottle, and turn the bottle upside down. Let it rest a few minutes, long enough for the ether to rise on top, then take off the compress from the long tube so that air may pass into the bottle above the liquid; then by opening the pinchcock on the smaller tube the liquid may be drawn off. The line of demarcation will be seen very clearly in the small glass tube as soon as the ether is drawn down to it, and by care not a drop need be lost.

[ORIGINAL COMMUNICATION.]

ON THE MENSTRUA FOR FLUID EXTRACTS AND TINCTURES, AND ALLIED SUBJECTS.

BY WILLIAM WEBER, PITTSTON, PA.

(Continued from page 104.)

Extractum Gelsemii Fluidum; Tinctura Gelsemii.—Menstruum, alcohol for both. Active principle, gelsemine, about 0.49 per cent, 1 part soluble in 650 parts of water; therefore the menstruum is proper for fluid extract.

Extractum Gentianæ Fluidum.—Menstruum, diluted alcohol. Gentiopicrin one-tenth per cent, the active agent, easily soluble in water and alcohol; therefore a weaker menstruum might be just as good, as recommended in the "Digest."

Extractum Geranii Fluidum.—Menstruum, diluted alcohol; tannin, 13 to 17 per cent (Maisch), appears to be sought here.

Extractum Gossypii Radicis Fluidum.—Menstruum, alcohol; action probably due to a resin.

Extractum Grindeliæ Fluidum.—Menstruum, 3 alcohol, 2 water; should be alcohol. Also, the National Dispensatory says: "Alcohol has yielded an unobjectionable fluid extract." Constituents, a little volatile oil, resin, possibly a glucoside and alkaloid (Maisch).

Extractum Guaranæ Fluidum.—Menstruum, 3 alcohol, 1 water. Contains caffeine, 3 to 5 per cent, soluble in 75 parts water, 35 parts alcohol, United States Pharmacopœia. In the "Digest," alcohol, or 2 alcohol and 1 water, or 50 alcohol, 4 glycerin, and 4 water, is recommended. If the drug should contain as high as 5 per cent of caffeine, the quantity would be too large even for pure alcohol to dissolve out, unless some other substance renders it more soluble in alcohol; but I found that 1 part of caffeine dissolves only partially in 35 parts of alcohol, as stated above. This result accounts, perhaps, for the statement to be found in the National Dispensatory: "The commercial fluid extract was found by Hosack (1883) to contain between 1.10 and 1.68 per cent of caffeine, or one-third to one-quarter present in guarana." Indeed, the menstruum, 2 alcohol, 1 water, proposed by A. Robbins, seems to be the proper one.

Extractum Hamamelidis Fluidum.—Menstruum, 1 alcohol, 2 water. Constituents not fully known as yet; but as hamamelis contains a volatile oil and bitter principle, a stronger alcoholic menstruum is perhaps indicated.

Extractum Hydrastis Fluidum (menstruum, 3 alcohol, 1 water); *Tinctura Hydrastis* (diluted alcohol).—Active constituents, berberine and hydrastine, both of which are only sparingly soluble in water; therefore alcohol would seem indicated.

Extractum Hyoscyami Fluidum (menstruum, 2 alcohol, 1 water + diluted alcohol); *Tinctura Hyoscyami* (diluted alcohol).—Active constituents, hyoscyamine, hyoscine, together, alkaloids about 0.3 per cent (Maisch), 0.4 per cent (Möller); 0.2 hyoscyamine soluble in 100 water, also hyoscine sparingly soluble in water; perhaps a stronger alcoholic menstruum useful, but these two alkaloids easily dissolve in diluted alcohol, as found for atropine.

Extractum Ipecacuanhæ Fluidum.—Menstruum, mostly alcohol; object, emetine 1 per cent (Möller), 1 to 2 per cent (Maisch).

Extractum Iridis Fluidum.—Menstruum, 3 alcohol, 1 water. No perfect analysis; probably a resin the active component, and therefore alcohol indicated.

Extractum Krameriæ Fluidum (menstruum, 20 glycerin, 80 diluted alcohol); *Tinctura Krameriæ* (diluted alcohol).—Object, kramero-tannic acid, 20 per cent (Maisch).

Extractum Leptandræ Fluidum.—Menstruum, 15 glycerin, 85 diluted alcohol. Stronger menstrua proposed. Active principle not known. Leptandrin soluble in water, resin 6 per cent, etc. (Maisch).

Extractum Lobeliæ Fluidum; Tinctura Lobeliæ.—Menstruum, diluted alcohol for both. No change proposed; lobeline easily soluble in water and alcohol.

Extractum Matico Fluidum (menstruum, 10 glycerin, 75 alcohol, 25 water + 3 alcohol, 1 water); *Tinctura Matico* (diluted alcohol).—Probably alcohol best, as activity likely depends on the volatile oil, 2.7 per cent (Möller).

Extractum Nucis Vomicæ Fluidum; Tinctura Nucis Vomicæ.—Menstruum, 8 alcohol, 1 water. Lyons ("Digest") points out that the fluid extract often contains less than 50 per cent of the total alkaloids, and that it seems practically impossible to exhaust nux vomica completely by any known processes for fluid extracts. Perhaps it would be well to add some sulphuric or hydrochloric acid to the menstruum before final operation.

Extractum Pareiræ Fluidum.—Menstruum, 20 glycerin + diluted alcohol. Active principle, pelosine, insoluble in water and identical with buxine and berberine; therefore alcohol would seem more appropriate.

Extractum Pilocarpi Fluidum.—Menstruum, diluted alcohol. Active constituents, pilocarpine one-quarter to one-half per cent (Maisch), and probably also jaborine. As the latter is less soluble in water than pilocarpine, alcohol would be preferable.

Extractum Podophylli Fluidum.—Menstruum, 3 alcohol, 1 water. Podophyllotoxin is the active principle, and being only sparingly soluble in water, alcohol is probably better.

Extractum Quassiæ Fluidum; Tinctura Quassiæ.—Diluted alcohol for both. Active principle, quassiin 0.6 per cent (Husemann and Hilger), easily soluble in water and alcohol; therefore a still weaker menstruum proposed.

Extractum Rhei Fluidum (menstruum, 3 alcohol, 1 water); *Tinctura Rhei* (diluted alcohol).—The constitution of rheum is very complex, and but little of it is definitely known; the menstruum, therefore, is difficult to determine, unless by the physiological action of preparations made with different menstrua.

Extractum Rhois Glabræ Fluidum.—Menstruum, 10 glycerin + diluted alcohol. New menstruum proposed in "Digest." Active principle, tannic acid.

Extractum Rosæ Fluidum.—Menstruum, 10 glycerin + diluted alcohol. Contains trace of volatile oil; perhaps alcohol indicated for a more aromatic fluid extract.

Extractum Rubi Fluidum.—Active principle, tannic acid, 10 to 12 per cent (Maisch). New menstruum proposed in "Digest."

Extractum Rumicis Fluidum.—Menstruum, diluted alcohol. If its action is due to chrysophanic acid, which is nearly insoluble in water, a stronger alcoholic menstruum is indicated. So also "Digest."

Extractum Sabinæ Fluidum.—Menstruum, alcohol, as it contains a volatile oil, about 2 per cent (Maisch), 3.75 per cent (Möller).

Extractum Sanguinariæ Fluidum (menstruum, alcohol); *Tinctura Sanguinariæ* (2 alcohol, 1 water).—Active principle, sanguinarine. Alcohol should also be adopted for the tincture.

*Read before the Kings County Pharmaceutical Society, April 8th, 1890.

Volumetric Estimation of Tannin.

E. GUENEZ, in a communication to the Académie des Sciences, proposes a novel method for estimating tannin (*Compt. Rend.*, 110, 532). The following abstract is taken from the *Chem. News* (April 25th):

The process of Löwenthal, modified by Neubauer, the most important of the volumetric methods, is applicable only in certain cases. It is founded upon the oxidation of tannin by permanganate, and it can be accurate only if applied to a solution of pure tannin. The presence of organic matters which accompany tannin in industrial extracts becomes a grave source of error.

The author founds a rapid process for the determination of tannin upon the following reactions:

1. If into a boiling solution of potassium-antimony tartrate, mixed with a suitable aniline color, there is poured a solution of tannin, there is formed a precipitate of antimony tartrate which carries down the coloring matter, forming a true lake. If the proportion of tannin is sufficient the supernatant liquid becomes colorless. The antimony salt must be in excess in reference to the coloring matter.

2. The volume of the colored solution of the antimony salt and the volume of the solution of tannin which must be added are always proportional. Dilution does not affect the results.

3. A given quantity of antimony tannate always fixes the same quantity of coloring matter.

4. If a solution of gallic acid is poured into a boiling solution of the antimony salt, no immediate precipitate of antimony gallate is formed. Under the same conditions the antimony tannate is produced immediately. Hence it is permissible to suppose that the presence of gallic acid does not interfere.

The method of operating is as follows:

A solution is prepared of

Tartar Emetic	12 Gm.
Poirier's Green, 4 J.E.	1 Gm.
Distilled Water	1 liter.

The antimony salt and the coloring matter are dissolved separately; the two solutions are then mixed and filtered. The aniline greens are the only colors suitable, and Poirier's green, 4 J. E., has given excellent results. This solution is standardized by means of a solution of tannin in ether, perfectly pure and dried previously in a vacuum over sulphuric acid. A solution is made up containing 5 to 6 Gm. per liter, and there is added a small quantity of thymol dissolved in alcohol to prevent mouldiness.

A burette, fitted with a glass cock, is filled with a solution of tannin, and on the other hand 20 C.c. of the colored solution of antimony salt and an equal volume of distilled water are put in a glass tube 35 Cm. in diameter. The colored solution is raised to a boil, and the tannin liquid is run in, at first by cubic centimetres and afterwards by drops, until the complete discoloration of the liquid, which must be boiled anew after each addition of tannin. There is formed a green flocculent precipitate, which readily collects together and enables the decoloration of the liquid to be observed. When complete the volume of the tannin consumed is read off on the burette, and the standard of the antimony solution is thus known.

This method is readily applicable to the analysis of industrial extracts; but as the tannins of these extracts are not identical with the tannin of gall nuts which has been selected as a standard, the richness of an extract will be represented in the analysis by an equivalent weight of nut-gall tannin.

This is the case with all volumetric processes when it is not possible to titrate the liquid with the same kind of tannin which has to be determined. The process of Muntz may be utilized to find the agreement between the gravimetric and the volumetric determination. The process is not vitiated by the presence of gallic acid, but it is not applicable to the determination of tannin in wines.

A New Process for Manufacturing Ferricyanide of Potassium.

Of the several methods that are available for converting ferrocyanide into ferricyanide on the large scale, that involving the use of chlorine is usually employed on account of its cheapness, but there are objections to its use. Especial precautions have to be taken to avoid the introduction of any excess of chlorine over that required to complete the reaction, otherwise the ferricyanide produced will suffer decrease both in quantity and quality. Another drawback to the use of chlorine is the occurrence of spontaneous explosions in the vessels containing the materials during the oxidation, due, as is commonly explained, to the formation of chloride of nitrogen. These inconveniences could be avoided by the use of peroxide of lead, but the cheapest means of producing that substance has been still too expensive hitherto for competing with chlorine as the oxidizing agent. But a recent invention of G. Kassner (*Chem. Zeit.*, 13, 1701) has made the use of lead peroxide practicable in the form of calcium plumbate, which is easily obtained by roasting oxide or carbonate of lead with calcium carbonate at a low red heat. In the conversion of ferrocyanide into ferricyanide by means of lead peroxide, a quantity of potassium hydrate is set free, which must be neutralized in some way before the reaction can go on to completion, and carbonic acid suffices for the neutralization. Kassner's process consists in adding calcium plumbate to a solution of potassium ferrocyanide and passing a stream of carbonic acid gas, when the reaction proceeds according to the equation:

$$2Fe(CN)_2(KCN)_4 + PbO_2(CaO)_24CO_2 =$$
$$= Fe_2(CN)_6(KCN)_6 + K_2CO_3 + PbCO_3 + 2CaCO_3$$

The carbonates of lead and calcium separate as an insoluble precipitate, which can be filtered off and regenerated by a simple roasting, whilst the solution contains potassium ferricyanide in a pure form and potassium carbonate as a valuable by-product. Kassner considers that the intrinsic merits of potassium ferricyanide as an oxidizing agent *in alkaline solution* will occasion an extensive demand for it when its production has become sufficiently cheap.—*Journ. Soc. Chem. Ind.*

Thioketone, the Worst-Smelling Substance Known.

An amusing instance of the inconveniences of carrying on chemical research in populated districts (*Brit. and Col. Drugg.*) appears accidentally in a paper on "Thio-derivatives of Ketone," by E. Baumann and Fromm. By the reaction of sulphuretted hydrogen on acetone in the presence of condensation agents, they obtained principally trithioaceton, $C_9H_{18}S_3$, and small quantities of a non-volatile, definitely crystalline compound, $C_{15}H_{30}S_4$, tetrathiopenton. At the same time, however, an exceedingly volatile body was formed, which possessed a smell so horrible that, in comparison therewith, ethylmercaptan, ethylenmercaptan, and other volatile sulphides must be considered as faint-smelling substances! The authors could not obtain the compound pure (for a reason which they mention further on), but there could be no doubt that it was the monosulphuretted acetone, C_3H_6S, or thioketone. As they were once distilling the reaction product of 100 Gm. aceton, concentrated hydrochloric acid, and sulphuretted hydrogen, with the most perfect arrangement for condensation, so that no perceptible loss of the product occurred, the atmosphere of the surrounding district of the town was infected over an area more than 800 yards wide! Every attempt to obtain the substance pure brought down such a storm of protest and complaint against the laboratory that the authors were compelled to relinquish the research.

Note on Wool Fat.

At a recent meeting of the Society of Chemical Industry, Mr. H. W. Langbeck read a paper on "Wool Fat and Processes for Obtaining It," in the course of which he gave his experience acquired in its manufacture, and added some further interesting information, which we reprint here (after the Society's *Journal*):

A patent was taken out by myself and my assistant, Mr. Ritsert, on May 7th, 1886, by which we treat the raw wool fat with boiling alcohol containing about 10 per cent of ether, by which means we dissolve the free fatty acids, the free cholesterin and isocholesterin, and the volatile ethers of the free fatty acids present in the raw wool fat. The remaining cholesterin ethers are then treated with steam in order to drive off remnants of the solvent. Or we dissolve the raw wool fat in ether and separate the cholesterin ethers by the addition of alcohol. Thus purified, they are mixed with about 20 per cent of water, and called by us cholesterinol.

Instead of working on raw wool fat we may use the lyes of wool-washing works.

Wool fat thus purified leaves much to be desired, as the presence of cholesterin ethers of higher melting point, wax-like, render it tough and make it unfit for pharmaceutical or cosmetical purposes.

I obtained a second patent in September of the same year, by which I use either the lyes of the wool-washing works or raw wool fat, commercially known as recovered fat. In working with the latter, I first separate the free fatty acids by means of solvents, such as alcohol mixed either with ether, chloroform, carbon bisulphide, acetone, benzolin, or naphtha, or by distilling the fatty acids off, preferably by superheated steam, at a temperature of 400°–450° F.

The fatty residue, after separation of the acids, is then filtered through animal charcoal, especially that known as prussiate waste, and this may be done in either of two ways: either by maintaining the fatty matter in a fluid condition by heat applied to it and to the filter, or by first dissolving the fatty matter, preferably in benzolin, carbon bisulphide, or acetone, and filtering the solution. The solvent is then recovered by distillation, and steam or warm air is blown through the fatty matter until all traces of the solvent have disappeared, when such has been used. The so purified wool fat is anhydrous, of a yellow color, and free from smell; if required as basis for ointments, pomatums, etc., 20 to 30 per cent of either water or a solution of peroxide of hydrogen is incorporated with it, thus producing a pure white material.

Dr. A. von Rad, of Bavaria, applied for a German patent in March, 1887. In his process he precipitates the lyes of wool-washing works with slaked lime, and deodorizes the precipitate by means of chlorinated lime and manganate or permanganate of potash or soda. The precipitate is then dried and the wool fat dissolved out successively by alcohol, benzin, carbon bisulphide, benzol, and a mixture of ether and chloroform; and in order to give this fat a proper consistence, he mixes it with neutral ethyl or methyl ethers of oleic acid and calls it "Lanesine."

Later on Dr. von Rad obtained a second patent for a process by which he heats raw wool fat with alcohol and sulphuric acid, thereby changing the free fatty acids into the corresponding ethers.

Messrs. Singer and Judell extract the fat from wool by means of carbon bisulphide—a method tried years ago, but abandoned owing to the difficulty of rendering the wool odorless, or, when driving off the solvent by heat, to spoiling the wool. Messrs. Singer and Judell seem to have avoided this difficulty by using a very elaborate apparatus.

In order to prepare wool for the spindles, the dirt, fat, salts, soap, etc., naturally contained in the wool must be separated from it. This is generally done by washing and scouring the wool with soap lyes, which are then called liquor, and are of a dirty grayish, milky appearance, of the smell of ordinary soapsuds when fresh, of a putrid, ammoniacal smell after standing some time, and consist chiefly of potash salts, naturally found in the fleece of sheep, of wool fat, dirt, and soap.

Formerly this liquor was wasted ; in later years it was saturated by means of acid, especially sulphuric acid, thereby recovering part of the fat. By this treatment the soap that has been used in scouring is decomposed, and its fatty acids, together with the wool fat and dirt, form a so-called magma, from which, after dehydrating, the fats are obtained by hot pressure ; these are then remelted, allowed to settle, and filled into casks. Till about two years ago the value of such recovered fat was £7 per ton; now £11, £12, and even £13 are obtained, because large quantities are used in the United States for softening leather. I am told that in the course of twelve to eighteen months the thus greased leather deteriorates on account of the large amount of the free fatty acids present in the fat. Coarse wool contains about 7 to 10 per cent of fat, whilst fine wool, such as is imported from the Cape, Australia, and New Zealand, contains 30 to 40, and even 50 per cent ; but the liquor yields by the acid treatment only about half the quantity it contains.

By my present invention I recover all the fat as well as the potash salts, dirt, and soap used in washing wool.

The wool is twice soaked in warm water of a temperature not exceeding 110° F., and pressed or dried by centrifugal action. The water thus obtained contains the potash salts naturally present in wool, together with a small quantity of potash soap formed by the action of potash on the cholesterin ethers and volatile acids, and also part of the dirt adhering to the wool; it is allowed to settle, and then concentrated in a suitable vacuum apparatus, preferably a quadruple Yaryan, then finally evaporated and dried, thereby obtaining the potash salts in an alkaline but impure condition; or the water is saturated with hydrochloric, sulphuric, or phosphoric acid, in order to more speedily form a sediment, and concentrated as before, thereby obtaining the potash salts as chlorides, sulphates, or phosphates. The sediment is either dried by heat, filter press, or centrifugal apparatus, or the potash salts are dried together with the dirt and used as manure. If it be desired to obtain the potash salts in a purer state, they have to be calcined, lixiviated, and recrystallized.

After concentrating the water and acidifying it, the emulsion is broken up and the small quantities of fat, together with the dirt, are removed and worked up together with the concentrated liquor of the subsequent washing with soap lye.

After the first treatment with water, the wool is washed and scoured with soap lye, consisting generally of an emulsion of olive oil and potash lye diluted with water, by which means all the fat, together with the remaining dirt, is removed, and forms with the lye an emulsion; the wool is then rinsed in water, pressed, and dried. The emulsion, together with the rinsings, are as far as possible concentrated on a Yaryan apparatus, and treated repeatedly with a mixture of alcohol and water, for economy's sake methylated or otherwise denaturalized spirit. I take, for instance, equal parts of spirit and water, but it may be varied to 3 parts of spirit and 2 parts of water, or 2 parts of spirit and 3 parts of water.

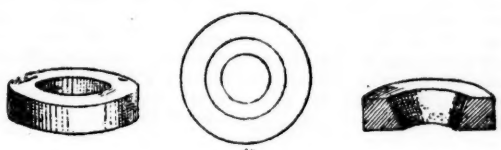
By this treatment the emulsion is broken up and the soap dissolved in the diluted spirit, leaving behind the wool fat and dirt; the soap and spirit are separated and recovered by distillation.

The wool fat is then extracted from the dirt either by hot pressure or by means of solvents, such as carbon bisulphide or benzin, for instance, and the solvent recovered by distillation. The wool fat is then practically free from soap and dirt, and, being also free from fatty acids, forms a valuable lubricant or leather grease, or it can be further purified by my patented process described before. The recovered soap is by itself unsuitable for washing purposes, because it contains a large amount of a soap which does not give a good lather with water, besides also a small quantity of cholesterin ethers of a higher melting point, probably stearate of cholesterin, which can be separated by treatment with strong spirit.

It is advisable to filter the soap solution, when cold, through flannel bags. The filtered liquid consists chiefly of oleine soap, and is recovered by distilling off the solvent, whilst the remnant on the filters can be made use of, after decomposition with acids, for the manufacture of candles, for instance. This remnant soap is very sparingly soluble in water, but dissolves easily in hot spirit, from which solvent it separates whilst cooling, similar to stearine soap.

MENTHOL CONES.

THERE is little art in making these, but still a few wrinkles gathered from practical experience in manufacturing them on the large scale will not be out of place here. I may as well, however, preface my remarks with the hint that competition in the menthol-cone business is so keen that it is questionable whether it does not pay better to buy the cones than to make them. That is a point which retailers must settle for themselves. If they are to do the business properly they should have a variety of moulds, and these cost money. The question is, Will that cost be covered by the profit on the cones? Some druggists' sundriesmen supply the moulds. Like suppository moulds, they must be perfectly smooth inside, and the two parts should join exactly. An ordinary 2-drachm pessary mould is sometimes used for the cones, and in the absence of anything else is quite suitable. Menthol to be used for making cones must be quite free from oil; if not, it has too low a melting point and is unsuitable for the purpose. The menthol should be melted on a water-bath somewhat different from what is generally used for making ointments, as the usual surface exposed would favor too great vaporization of the stearoptene. It is better to place the menthol in a 1-ounce quinine bottle, and then place the bottle in hot water. Its contents soon melt, and are ready for pouring into the mould. Meanwhile the latter should have been placed near the fire, so as to acquire such a degree of warmth that it may be held comfortably in the hand. It is very important that this heating should be carefully attended to, as the temperature of the mould has much to do with the success of the operation. As soon as the cones solidify they are removed from the moulds, so as to prevent the latter from becoming cold again. Once the mould gets below the proper temperature the cones are certain to break. The next thing to do is to fix them into the holders. This is a matter which requires some care and attention. Instead of melting the base of the cone in a spirit flame, as is generally done, a better plan is as follows: Get a lead ring made, of the dimensions shown in the following figures,



LEAD RING.

A. View from the top. B. Section. The outer and second circle show the top, and the outer and third circle the bottom. C. Cross section.

and place it (the smaller end downward) in a flat evaporating dish (the lid of a 2-ounce ointment pot will do), along with some menthol. When the latter has melted dip a cone first in the ring, then in the hot menthol, and immediately fix in the holder. There are other minor difficulties to be met with in the course of manufacture which can only be overcome by the indispensable "mechanical ingenuity."—*Chemist and Druggist*, May 24th, 1890.

Iodized Cotton.

ETHEREAL and alcoholic iodine solutions, when brought into contact with the skin, irritate and even cauterize, whilst the absorption of iodine is limited. Good results are obtained by using iodized cotton, from which the iodine is liberated by very gentle heat. It is prepared as follows: Carefully cleaned cotton [purified, absorbent cotton—ED. AM. DRUGG.] is put for a few minutes into a 2-per-cent solution of sodium carbonate, washed, and then kept for half an hour in 4-per-cent bleaching powder solution. It is washed until free from alkali, and kept for a quarter of an hour in water acidified with 5-per-cent hydrochloric acid; it is again washed and dried. Finely powdered iodine (8 parts) is strewn over the sheets of cotton (100 parts), which are then lightly rolled together and heated in a glass bottle until iodine vapor is given off. The bottle is then stoppered and heated for two hours in a water-bath. The iodized cotton is kept in well-closed glass vessels.—BRÉAUDET and CATHÉLINEAU in *Rép. de Pharm.* and *J. S. Chem. Ind.*

Trade Marks have been taken out in Germany by the Farbwerke of Meister, Lucius & Brüning in Höchst o/M., for two new preparations supposed to be intended for use in medicine. They are called "Phthiosot" and "Benzosol."

Metric Weights and Measures in the United States.*

MR. PRESIDENT AND GENTLEMEN:—It gives me very great pleasure this morning to be afforded the opportunity to speak to you on the subject of weights and measures. I might explain in the beginning that, although I have very long been personally interested in the subject of weights and measures, it happens just now that I am officially interested in the subject. And this, perhaps, is the excuse which the Committee has for inviting me to address the Convention this morning.

I am sure this Convention does not need any instruction from me with regard to the existing system or customary system of weights and measures. It is very probable that you are as well posted on the subject as anybody with regard to this system. It abounds in absurdities and in complexities and a great many other things that I will not stop to mention, that are altogether disreputable.

That is, I mean to say the customary system of weights and measures in use is founded on no scientific basis, and is, therefore, as indefinite and as illogical as it can well be. It is probably known to all of us that this customary system has come to us as the "English" system of weights and measures, and that it is essentially different from what the English system is at the present time. That is to say, that, within the last fifty years, the English have improved their system of weights and measures, while we have not improved ours, nor changed to the extent that they have, by any means, and yet they have thrown off some of the absurdities existing in the earlier part of the century, and which still cling, I am sorry to say, to our own system. Now, everybody, I think, who has been interested in the system of weights and measures in this country, has been looking for many years to the final adoption of a more rational system—that is to say, the metric system; not the French system especially, but the metric system founded upon the meter as a basis.

Now, I want to say a few words about modern progress in this line in the direction of the metric system.

You all know the United States was one of the first nations to receive copies of the meter. As a matter of fact, during the French Revolution the Committee on Safety, of which the celebrated Robespierre was chairman, transmitted to the United States a copper meter and a copper kilogramme by order of the Committee, and this meter and kilogramme were placed among the archives. We have in the archives of the United States Coast Survey Office what is known as the Committee meter—an iron bar of great historic interest, as only three or four are now in existence. This is one of the fifteen iron bars which were prepared from a study of the meter, and was obtained very long ago. We began early in the United States to interest ourselves in this subject. Perhaps some of you know that this matter was a subject of interest to Washington and Adams and others. Indeed, they were all interested in this great and important subject of metrology.

The Congress of the United States gives power to establish weights and coinage, but Congress has never established a system of weights and measures. It has established a system of coinage. That was done very early, at an early period of our national existence. The first step that looked to the actual introduction of the metric system in this country came many years after this early period I have spoken of; that is to say, it came in the year 1868, when a law was passed by the Congress of the United States legalizing the use of the metric system in this country, and establishing certain approximate relations between the metric and the customary systems. This was a most important act, although perhaps there was little change, immediately after the passage of this act, in the condition of things compared with what existed before, and yet the passage of this act was an epoch in the history of metrology in this country.

I want to emphasize one fact which is not generally recognized in relation to this subject, and that is, that *to-day the meter and the kilogramme are the only units that have been established by Congress for this whole country.* It has often been thought and assumed that the yard is a legal unit of length, and that the pound is a legal unit of weight, and that both were established by act of Congress, but this is not the case. The troy pound in the Philadelphia Mint was established by act of Congress and was established as the legal unit at the Mint for the coinage, and for that only, and, therefore, has no authority for any other purpose. The avoirdupois pound never was the legal unit, and the yard has never been established by act of Congress of the United States as a legal unit. The authority which the yard has in this country depends entirely upon the yard which was adopted by the first Superintendent of the Coast Survey, Mr. Husler, as the unit of length in the survey of the coast, and by the Secretary of the Treasury, at the same time, for use in the customary uses; that is to say, it is a departmental adoption. The Second Auditor of the Treasury has adopted the yard as the unit of length. About the year 1835 Congress passed a law authorizing the Superintendent of Weights and Measures to certify the exact gallon to the office of the Treasury Department as a standard, to be presented to the States of the Union, and that was done. The result of this was that in all the States in the Union practical laws were at once passed adopting these models of the Treasury Department as standards of length. As a matter of fact, therefore, our legislation to-day, so far as it exists in the United States, is comprised in *State* and not in national legislation.

As a matter of interest, it may be stated that some of the States have failed to adopt this law with regard to the United States standard; and in some States there actually exist laws punishing the use of false weights, and yet there is no law establishing what the true weight is. There is, however, a resolution concerning this matter before Congress at the present time. Whatever legislation has been enacted has *not* been *national;* it was really State legislation. In 1860 Congress passed a general act legalizing the meter and kilogramme all over the country; therefore *the meter and the kilogramme are the only United States standards which we have to-day*—that is, which have really been adopted.

Now, without alluding to the various measures that we have taken between 1866 and the present time to disseminate the knowledge of the metric system, I want to make a few remarks on the growth of the International Bureau of Weights and Measures. I would say that in 1869 the French government invited other governments to send delegates to Paris in order to attend the International Bureau of Weights and Measures, that they might agree on the construction of a new international meter. The old meter of the archives was still preserved, but it was relegated to a back seat, and no longer had the great authority it formerly had, since its form was not recognized as coming up to the modern ideas of metrology. The French government, therefore, concluded that it was time to construct a new meter which should be first in authority the world over.

The outcome of this was that the United States sent delegates, and in 1875 there was organized the International Bureau of Weights and Measures. This was by an International Convention. It was held in France, and about twenty-five nations were represented and joined together at that time, and what they did has been authority up to the present time, or until six months ago. The International Bureau of Weights and Measures has been supported by the payment of various sums of money by various nations. The United States has contributed to this bureau forty or fifty thousand dollars. The trouble was to get material out of which to make the standards, but finally the material was found and used, and the final standard was produced. The result of that is that we have a new invention, a prototype standard.

Copies of this prototype standard were subsequently distributed to all the nations of the world who had participated in the Convention, and two of these copies came to the United States, two meters and two kilogrammes. One of these meters and one of these kilogrammes were brought over from Paris by Mr. Graham, of the Geodetic Survey, and were deposited in the archives of the Bureau of Weights and Measures. They bore the seal of the United States Minister at Paris, and of Prof. Davidson and Dr. Gould, who were our representatives at the time.

On the 2d day of January, 1890, these standards were taken to the Executive Mansion, to the Cabinet room, and were opened. The seals were broken by the President of the United States, witnessed by the Secretary of State and the Secretary of the Treasury, and also by twenty or thirty distinguished scientific men interested in the subject of weights and measures, who came from various parts of the country.

I mention these circumstances because many of you may not know that these standards have been received. Models have been constructed of these standards, and I have brought these copies here so that they may be inspected, and you will pardon me if I take the time to show them to this Convention. The meter came to us in a case very much like this [showing the copy]. Outside it represents the appearance of being simply a rod. After the covers of the box are removed a recess is seen in which is contained the meter. In this case I have a model. Both package and contents are made in imitation of the original, so that we may say that we have the original here, since you could not distinguish the one from the other, so far as appearance is concerned. On lifting off the cap, as you see I do here, you find the meter in its place, and I will lift this out. This model, I may say, is made of platinum and iridium, coated with aluminium, so that it resembles very closely the appearance of the original—90 per cent platinum and 10 per cent iridium. I can take this out, as I do now, and show you how it looks. It is in the form of a bar, but it has a peculiar construction. It is made in the form of a cross section. It is an exact model in length and dimensions, and it is in the form of the letter H in the cross section—that is, any stress that the bar may receive will be compensated for, so that it may simply bend in one direction and then in another; and a short distance from each end we have fine lines, and they represent the length of the meter.

* Address delivered by Prof. T. C. Mendenhall, Superintendent of the U. S. Coast and Geodetic Survey, before the Pharmacopœial Convention held at Washington, May 9th, 1890.

The kilogramme is also constructed with great simplicity, very different from the old standard, and of peculiar form. The old model had hooks. In fact, the standard troy pound of Philadelphia was most imperfect, being hollow and loaded with little bits of wire, and it was adjusted by taking them out and putting them in. Just how many times they have been out since the original was made it is, of course, difficult for us to say. It is the general belief that they have never been out, but it is impossible to assert this with absolute certainty. Yet it is the general belief that it has never been tampered with. Still, it ceases to be such a standard as ought to be legally recognized.

The new kilogramme is as perfect in form as could be imagined. Here is a model of it, looking exactly like the original. Its diameter is equal to its altitude. It is made of platinum 90 per cent and iridium 10 per cent. The general construction of that model is very simple, as simple perhaps as could be devised as a standard for mass. Nothing, perhaps, more simple could have been devised than this.

The receipt of these standards constitutes an epoch in the history of weights and measures in this country. It has afforded me very great pleasure to show you these models, and to speak of their receipt. In conclusion, I want to say, Mr. President, that we have prepared recently a table, which I have here, for converting the customary weights and measures into the metric weights and measures. A great many kinds of such tables have been prepared at various times, but this one has been used for the last two or three months, and has been found to be the most convenient that has been used for converting one system into another. I would say that it is the most convenient that has yet been prepared, and copies of these tables have been sent here, and if any of the members of this Convention wish to obtain them they can be furnished without cost if the members will meet me at my office.'

[Prof. Mendenhall's address was listened to with the greatest interest, and the thanks of the Convention were tendered to him at its conclusion.—Ed. Am. Drugg.]

Testing Diuretin.

Dr Vulpius has recently made a detailed study of this new "diuretic," which was reported to be a combination of theobromine with sodium salicylate. Dr. Vulpius finds that the compound is not analogous to the caffeine combination with sodium salicylate, benzoate, or cinnamate, but that it is a well-characterized compound of theobromine-sodium and salicylate of sodium in molecular proportions. The two substances may, in fact, be supposed to be brought, in molecular proportion, into aqueous solution, which is then evaporated. In determining the value of a sample of the compound—and, according to a remark by Dr. Vulpius, there appear to be several qualities on the market—the most important criteria are the quantity of theobromine and its purity, and also the amount of salicylic acid. The amount of theobromine is best detected by the following method, based upon the difficult solubility (1:1,600) of the alkaloid. The aqueous solution of the compound is supersaturated with dilute acid, and then again rendered alkaline by dilute solution of ammonia, which causes the precipitation of theobromine, while salicylate of sodium now remains in solution, together with a little theobromine, the solubility of which in water is increased by the presence of the salicylate. Experiment has shown that the quantity thus retained is 0.130 Gm. for every 2 Gm. of diuretin. The separated theobromine is collected on a filter, washed, dried, and weighed. The resulting weight, increased by 0.130, indicates the quantity of theobromine present in 2 Gm. of the diuretin.

Dr. Vulpius recommends to require, not the full theoretical quantity (49.7 per cent) of alkaloid, but only 46.5 per cent, so that 2 Gm. of diuretin would have to yield 0.8 Gm. of theobromine.

The purity of the substance is demonstrated by its being sublimable, by leaving no residue on combustion, and by its ready and complete solubility in solution of soda.

The amount of salicylic acid is determined by acidulating the aqueous solution (filtrate and washings) remaining after the separation of theobromine, and contained in a separatory funnel, then agitating it with ether, which dissolves out the salicylic acid. On evaporation, the acid is left behind and may be weighed. It should not be less than 0.77 Gm. (theoretically 0.762) from 2 Gm. of diuretin.

If theobromine is to be looked for merely qualitatively, it may first be separated as directed above, then dissolved by addition of solution of potassa, and shaken out with chloroform. If 1 Gm. of diuretin was originally used, the residue on evaporating the chloroform should not weigh more than 0.005 Gm. A larger amount would point to the probable presence of caffeine, which is much more soluble in chloroform.—After *Pharm. Zeitung.*

Washing-blue has a rival in a blue soap, which is produced in Germany. The way in which it is made is to add a solution of aniline green in glacial acetic acid to the soap basis. The alkali of the soap changes the green to blue, and gives the soap a uniform color.

HOW TO CUT THICK GLASS TUBING.

Dr. F. Muck draws attention to an instrument which appears to be but little known, but which is the best contrivance for evenly cutting a piece of thick glass tubing. C. Gerhardt, dealer in chemical apparatus at Bonn, saw it first years ago in the hands of a travelling agent, and has now put it on the market. It will no doubt soon be for sale by our dealers in chemical apparatus.

The tool consists of a rod, bearing near one end a good

glazier's diamond firmly set. Upon the rod, a handle with disc at one end may be adjusted in any position by means of the set screw.

To use the instrument, one end of the glass tube to be cut should be smooth and squarely cut. If neither end is true, then a piece of pasteboard tubing can be fastened to one end.

The diamond end of the rod is now inserted into the glass tube up to the point where the latter is to be cut, and the handle, with disc in contact with the smooth end of the tube, firmly clamped upon the rod by the set screw. The rod is then rotated so that the diamond may make a clean cut over the inner surface. Upon pulling upon both ends, the tube will squarely break off at the cut.—*Zeitsch. f. anal. Chem.*, 1890, 142.

NEW ALCOHOL AND BENZIN LAMPS.

In the last issue of the *Helfenberg Annalen* (for 1889, published in 1890) a new alcohol lamp is described which possesses several advantages over those previously used. Its upper portion resembles a Bunsen burner, and, indeed, serves for allowing a supply of air to mingle with the alcohol diffused through the wick, whereby the heat and draught are materially increased.

When the burner has been properly charged with a wick and with alcohol, and it is to be lit, the adjustable top of the tube is screwed up a trifle, and a little alcohol poured on the end of the wick from above. When this is ignited, it soon draws up more alcohol from the reservoir. There is a similar lamp, differing only by having an arrangement which keeps the reservoir of benzin surrounded with a current of air.

The new burners, with iron stands for holding vessels to be placed above them, are made by C. Barthel at Niederpoyritz, near Dresden, and may be ordered through dealers in chemical apparatus.

THOMPSON'S ATMOSPHERIC GAS JET.

Mr. C. Thompson, pharmaceutical chemist, Sparkbrook, Birmingham, introduces a gas jet, the exact size and design of which are shown in the accompanying engraving. By a simple motion of the sliding shield at the base of the jet the supply of air is regulated or entirely cut off. In the latter case an ordinary white flame is obtained; but when the full quantity of air is admitted a blow-pipe flame of intense heat is provided, which will serve many purposes at the dispensing counter. For sealing wax this Bunsen flame is much superior to the usual jet.

Estimation of Water in Phenol.

A sample of crude carbolic acid (*i.e.*, the liquid remaining after crystallization of true phenol, and consisting of cresol and higher homologues), when tested by three methods—(No. 1), by distillation; (No. 2), by agitating 1 volume with 3 volumes of saturated salt solution; (No. 3), by agitation with equal volumes of 48 to 50 per cent of sulphuric acid (conc.)—gave the following results: No. 1, water, 8.6 per cent; No. 2, water, 8.00 per cent; No. 3, water, 8.25 per cent.

The distillation process gives the true percentage of water if the distillate be not observed too late; next to this is the test with vitriol.—J. A. Wilson, in *Chem. News* (May 16th).

How Drugs are Imported.

MR. JOHN C. UMNEY described, at a meeting of the School of Pharmacy Students' Association, the various forms in which drugs reach the London market, and the information cannot fail to interest many of our readers who rarely have opportunities for examining the original packages.

Alcohol.—It is largely exported to this country [England; this is to be understood elsewhere in this article] from Germany, in puncheons containing about 120 gallons of 90 per cent to 92 per cent real alcoholic strength. The contents of these puncheons are determined by gaugers. Though it may seem at first sight curious that the Customs should depend solely on this method of determining the contents for the impost of duty, confirmation by weighing shows with what marvellous accuracy this operation is usually carried out.

Aloes.—The Barbadoes variety is usually imported in gourds varying in weight from 2 to 20 pounds, into which the drug is poured in a melted condition, the hole being closed by a piece of calico tacked over the opening. Those sent from Curaçoa are packed in square boxes averaging in weight about 75 pounds.

Socotrine is imported (principally by way of Bombay) in tin-lined cases, generally those that have contained Martell's brandy, this firm's trade mark being usually visible on the side of the package.

Another kind, which some pharmacognosists are of opinion is produced from the same variety of aloe as that grown in Barbadoes, reaches us in skins, usually those of the goat, sometimes monkey, whilst a third kind of package, the variety of which it is not easy to identify, is met with in tins similar to those which are familiar to you all as "castor-oil tins."

Almonds (Bitter).—The finest are imported from Mogador, and reach this country packed in serons of about 2 cwt. each. A considerable quantity is also sent from Sicily. The former are largely used for the production of the fixed oil of almonds, and the cake, after expression, for the preparation of the essential oil.

Balsam of Canada, formerly imported from Lower Canada in large barrels and kegs, is now seen almost entirely in tins averaging about 40 pounds' weight.

Balsam of Tolu is now no longer imported in calabashes, as at the beginning of this century, but in cylindrical tins of about 6 inches diameter, weighing about 10 pounds.

Camphor (Refined).—That exported to this country from Germany is almost always in bells of about 5 pounds' weight, only about one-third the size of those sublimed in England. A few Continental refiners, however, send the drug in imitation of "English Bells," which are of about 14 pounds' weight.

Cantharides reach this country in casks, often containing as much as 5 cwt., principally by way of Trieste. The "Chinese Flies" (*Mylabris*) are usually sent in boxes of 100 pounds' weight.

Cassia Bark is exported to this country in enormous quantities, principally from Canton, packed in loose bundles, whilst the varieties shipped from the Philippines usually reach Spain by way of Cadiz.

Castor Oil is sent to this country in enormous quantities from Calcutta in tins, 4 in a case, of about 40 pounds each. It is being increasingly exported from Leghorn.

Catechu.—Both the black and pale are exported to this country in very large quantities from India and Straits Settlements for dyeing and tanning purposes. Both varieties arrive in "mats" of aggregated masses, a small proportion of the paler variety coming also in what are known in trade as "gambier-free cubes."

Chamomile Flowers.—The bulk of the imported flowers is produced in Belgium and is exported in one-hundredweight bags. France has recently taken up the growing of this drug, and is surpassing Belgium both in the size and color of its flowers.

Chiretta is imported in flattish bundles, about 2 to 3 feet long, tied with a slip of bamboo. It has been found occasionally "false-packed," the outside being chiretta, the inside some other herb; in the case of the bundle exhibited the interior consisting entirely of *Rubia tinctorum* (madder).

Cinchona Barks.—The "wild" bark from the forests of Bolivia and Ecuador is now almost a thing of the past, the collection of it being but poorly remunerative on account of the competition with the cultivated barks of the same continent and those of Java and Ceylon. Very few hide serons are now seen as compared with years since, when this package was almost universally adopted. The Indian variety of bark reaches us either in pressed packed bales, when consisting of shavings (chiefly used in quinine manufacture), or in well-made cases if of selected quills for use by pharmacists.

Cinnamon Bark is always repacked, or "worked," as it is termed, on its arrival in the dock warehouses of London. The "small" cinnamon sold for pharmacists' use consists of the portions broken off in this process of working, which comprises repacking and trimming the bundles.

Civet is exported from the coast of Abyssinia in horns, in which the curious secretion is placed after collection.

Coca Leaves.—The South American "wild" coca is imported principally in bales of plaited rush, whilst that from Java reaches this country in very excellent condition in lead-lined cases. English planters in Ceylon, who have become dissatisfied with the low rates ruling for cinchona barks, have taken up the cultivation of coca, and are now growing for export to the London market that known among trade varieties as Bolivian.

Cod-Liver Oil.—The Norwegian oil, of which upwards of 5,000 casks are used medicinally every year, is always imported in tin cylinders of 25 gallons each, provided with a screw plug, with a wooden exterior. The package is a perfectly "unique" one. The inferior oil that reaches this country from Newfoundland is in unlined casks of irregular size.

Colocynth.—The whole unpeeled fruit is imported from Mogador in very small quantities, the principal use in this country being for the pharmacist's show jar. The usual method of importation is as the peeled fruit, that sent from Turkey commanding nearly twice the price of that from Mogador. The difference in the color of the seeds, which causes this variation in price, as it prevents the latter variety from being used for preparing a pale powder, appears to be due to the different degree of ripeness of the seed, but is so constant as to be relied upon by buyers as their chief distinguishing feature.

Gum Acacia.—The fine white gums, which now, unfortunately, are almost absent from English pharmacy, formerly reached us in serons weighing about 3 to 4 cwt. That now imported, of very inferior quality, both as regards color and more especially adhesive properties, is shipped from the Egyptian ports in cases and barrels of varying size. A gum very much resembling in appearance, at any rate, the old Kordofan gum, is now reaching this country by way of Mogador, but the exact district of its actual production is uncertain.

Gum Benzoin.—The Siam variety, used principally for the production of incense, and distinguished by its very agreeable vanilla odor, is imported in cases of aggregated tears. That from Sumatra is usually sent to this country in boxes containing about 2 cwt.

Honey.—Many countries furnish us with honey, each having its own distinctive flavor and character; and so easily are these distinguished by those who are accustomed to handle them that with ease the experienced buyer could tell blindfolded whether the sample were Californian, Chilian, West Indian, French, or English. The Californian variety reaches us in tins resembling castor-oil tins, two of such being packed in a case, the Chilian in small kegs of 1¼ cwt., that from Jamaica in barrels of 3½ cwt., and the French in small kegs of 35 kilos.

Ipecacuanha Root, after drying, is stowed in a package called a "seron," made of undressed cowhide, shaped, as you will see from the one shown, by pressure whilst still fresh. A considerable quantity of this drug now reaches this country from Rio in canvas instead of hide serons.

Manna is exported to this country, principally from Palermo, in tin boxes weighing about 14 pounds each.

Mercury is sent from Spain and Italy in wrought-iron bottles, the appearance of which is quite familiar to all of you, the contents of which weigh 75 pounds, most of the import into this country being under the control of Rothschild & Sons.

Musk.—The finest variety is obtained from Thibet, and reaches this country in small caddies, the value of one of which, such as I have here, if of the best quality, amounts to between £80 and £100 sterling.

Oils.—Oils of Cajuput, Citronella, and Verbena are usually sent to this country in bottles which have been previously exported, filled with brandy and spirits, to the various localities where the oils are distilled.

Oils of Lemon and Bergamot are imported in coppers of 12½, 25, or even up to 100 pounds' weight, principally from Sicily (Palermo and Messina). These "coppers" are weighted at the bottom with lead in order to strengthen them, and consequently the oils often contain minute traces of that metal.

Olive Oil.—The finest quality is now imported in pipes (about 110 gallons) from Leghorn. It is very seldom seen now in 10 and 20 gallon wickered vessels, known respectively as "half jars" and "jars."

Star Anise Oil is exported very largely from Macao, China (though at the present time a considerable quantity is being manufactured in Tonquin), in curiously-shaped leaden tins having two handles, and bearing the label of their manufacturer. The contents of these tins average about 16 pounds, and they are usually packed 4 in a case.

Orris Root of very fair quality is imported to some extent from Mogador, but large shipments of the finest pale root are made from Leghorn. The Mogador variety is in serons of about 3 cwt. each.

Otto of Rose is exported to this country in vases varying

in capacity from one-half to 1 or 2 kilos. They are generally invoiced from Kezanlik (which is the centre of the otto-producing district) in Turkish ounces, that ounce exceeding the avoirdupois by 11.3 per cent (= 494.7 grains). The average yearly export is 4,000 pounds avoirdupois, equal to about £60,000 sterling.

Rhubarb Root is imported almost entirely from China (the greater part of that produced in England being consumed abroad, as its use in British pharmacy is precluded by the Pharmacopœia directions). The Canton and Shenzi rhubarbs are imported in cases varying in weight from 1 to 3 cwt., and are of very variable quality, whole chests sometimes affording but a few pounds of sound root.

Saffron.—The best quality of this drug is exported from Valencia, and is sent to this country in tin-lined cases containing about 100 pounds' weight. The Alicante and Barcelona saffron is invariably "loaded" with carbonate of calcium or baryta, made adherent with glycerin or some other sticky substance.

Sarsaparilla.—The Jamaica and Lima varieties are imported in bundles of about 2 pounds each, tied together to form a bale of about 125 pounds' weight; whilst that from Honduras, after being bundled, is formed into a package with cowhide ends.

Senna.—The Tinnevelly variety arrives in pressed packed bales, resorted to in order to reduce the cubical space occupied to a minimum, freightage being charged by vessels, as you are doubtless aware, by this method, and not by weight as in overland traffic. The Alexandrian variety comes chiefly in cases.

Spermaceti.—That shipped from America is in boxes of 60 pounds' weight. A considerable amount is refined here, a large quantity of sperm oil very rich in spermaceti being shipped to this country from the Seychelle Islands and Mauritius.

Tamarinds.—The finest variety are shipped from the Barbadoes in casks, inferior qualities being imported from St. Kitt's, both being known as West Indian. A black variety is imported from the East Indies and also from Egypt in a dried, pressed condition, these being used principally by manufacturers of sauces.

Vanillas are generally seen in bundles tied at the middle and both ends, though rarely only in the centre. Mauritius contributes a large proportion both to our market and those of the Continent. The Seychelles also contribute largely excellent pods, both as regards quality and size.

Wax.—The finest French wax is usually imported in bars of 4 or 5 pounds' weight; that from Jamaica usually in irregular-sized saucers resembling the English.

Woods.—At the London docks a large area is set apart for the reception of dyewoods, where, among others, are stored quassia and sassafras. Valuable wood, however, such as santal, is usually packed in what are termed "robbins"—large upright bales. All these woods are cut by machinery before they are seen in the small pieces familiar to pharmacists.—*Pharm. Jour. and Trans.*

Coffee Inebriety.

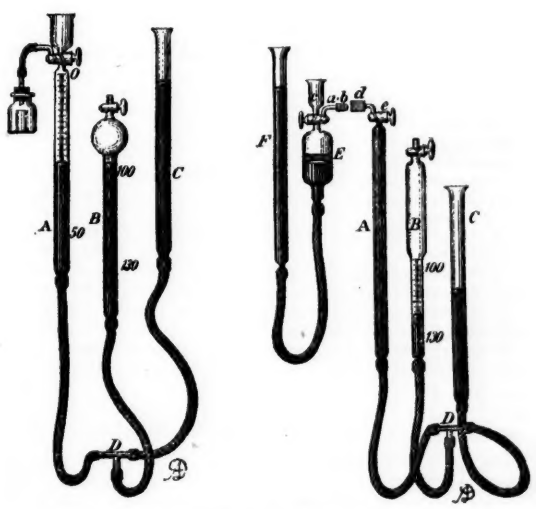
Dr. Mendel, of Berlin, has lately published a clinical study of this neurosis, his observations being made upon the women of the working population in and about Essen. He found large numbers of women who consumed over a pound of coffee in a week, and some men drank considerably more, besides beer and wine. The leading symptoms were profound depression of spirits, and frequent headaches, with insomnia. A strong dose of coffee would relieve this for a time, then it would return. The muscles would become weak and trembling, and the hands would tremble when at rest. An increasing aversion to labor and any steady work was noticeable. The heart's action was rapid and irregular, and palpitations and a heavy feeling in the precordial region were present. Dyspepsia of an extreme nervous type was also present. Acute rosacea was common in these cases. These symptoms constantly grow worse, and are only relieved by large quantities of coffee, generally of the infusion. In some cases the tincture was used. The victims suffer so seriously that they dare not abandon it for fear of death. Where brandy is taken, only temporary relief follows. The face becomes sallow, and the hands and feet cold, and an expression of dread and agony settles over the countenance, only relieved by using strong doses of coffee. In all these cases acute inflammations are likely to appear any time. An injury of any part of the body is the starting point for inflammations of an erysipelatous character. Melancholy and hysteria are present in all cases. Coffee inebriates are more common among the neurasthenics, and are more concealed because the effects of excessive doses of coffee are obscure and largely unknown. Many opium and alcoholic cases have an early history of excessive use of coffee, and are always more degenerate and difficult to treat. A very wide field for future study opens up in this direction.—*The Quarterly Journal of Inebriety*, April, 1890.

LUNGE'S GAS VOLUMETER.

Prof. Lunge, whose valuable nitrometer, either in its original form or in the modifications proposed by himself or by Prof. Allen, is now too well known to require renewed description, has recently added a further improvement, which renders the use of the instrument independent of temperature, pressure, or other conditions, and enables the operator to read off the volume of gas at once as compared with the standard.

The improvement consists in this, that between the gas-generating tube A and the open balance tube C there is interposed a third tube, B, ending above in a globe with accurately ground glass stopcock. This globe is of such a capacity that it will hold 100 C.c. to a mark situated a short distance inside of the tube. Below this mark the graduation, in one-tenth C.c., is continued for 30 to 40 C.c. further. The instrument is adjusted, when it is to be used, by observing the barometer and thermometer, and finding (by calculation, or, more conveniently, from tables) the volume which 100 C.c. of *dry* air would occupy under the existing barometric and thermometric conditions. The tube is then raised or lowered, with open stopcock, until the level of the mercury is at the exact point indicating this volume, and the stopcock then closed. If the stopcock is tight, the confined volume of air furnishes—when the liquids in tubes A and C are brought to a level—the reduction of the liberated gas to 0° C. and 760 Mm. pressure.

When moist gases are to be measured in the nitrometer A, a drop of water must be introduced in the globe of B. But when *dry* gases are given off in the nitrometer—for instance, when nitrogen dioxide is given off over sulphuric acid—a drop of the latter must be put in the globe.



Lunge's Gas Volumeter.

In the former case, when a drop of water is added, the tension of aqueous vapor at the existing temperature must be deducted from the barometric reading.

The three tubes are held by strong clamps on a stout stand, and the rubber tubing must be very strong and durable. The level of the mercury in tube B must be adjusted every day, or before every series of experiments. The quantity of air locked up in it is such that it would be exactly 100 C.c. at 0° C. and 760 Mm. pressure. Hence it is only necessary to lift or depress the tube C sufficiently, while the stopcock of B is open, to bring the mercury exactly to the mark 100.

Assuming that some nitrogen determination has been made (for instance, in urea) in tube A. When the generation of gas has ceased, the middle tube B is raised or lowered until the mercury stands exactly at 100, and clamped fast in this position. The next object is to adjust A so that the liquid in it will be on a level with that of the mercury in B, so, however, that the latter remains at 100. This is accomplished by raising C. It is usually necessary to make several readjustments before the liquids in A and B are exactly alike with the mercury at 100.

The above apparatus is intended primarily for operations in which mercury is used as filling liquid for the tubes. If another liquid besides mercury is used in the generating tube, the weight of it must be taken into consideration.

The use of this form of gas volumeter renders all calculated tables for reducing the various gases to volume at normal temperature and pressure unnecessary.

The apparatus is manufactured by C. Desaga in Heidelberg. Prof. Lunge has arranged that the manufacturer will be enabled to sell ready-prepared air-volume tubes, which need not be adjusted by the purchaser.—After *Chem. Centralbl.*

Cologne Water.

THE following formulæ are given by Hager in his latest work, "Manuale Pharmaceuticum" (6th edit., 8vo, Leipzig, 1890, Part I.):

I. Oil of Lavender, finest	1 part.
" " Rosemary	1 "
" " Neroli	5 parts.
" " Lemon	15 "
" " Bergamot	50 "
Alcohol [deodorized]	1,000 "

Mix, set aside for one month in a dark place, then filter.

II. Oil of Lavender, finest	2 Gm.
" " Neroli	1 "
" " Peppermint	0.5 "
" " Lemon	20 "
" " Bergamot	50 "
Musk	0.033 "
Alcohol [deodorized]	1,200 "

Mix, set aside a few days, repeatedly shaking, then filter. The musk is to be saturated with a little of the water before being added.

Macerate 7,500 Gm. of the alcohol with the aromatics, properly comminuted if solid. Then distil and collect 5,000 Gm. To the residue in the still add 3,000 Gm. more of alcohol and distil again. [The distillate may be suitably diluted.]

III. Oil of Lavender, finest	2 Gm.
" " Neroli	2 "
" " Lemon	10 "
" " Bergamot	25 "
Musk	0.015 "
Alcohol [deodorized]	500 "

Directions same as in preceding.

IV. The following is to be prepared by distillation:

Nutmeg	5 Gm.
Cardamom	5 "
Cinnamon	5 "
Melissa [herb]	50 "
Vanilla	2.5 "
Coriander	5 "
Oil of Bergamot	30 "
" " Lemon	15 "
" " Lavender	15 "
" " Thyme	10 "
" " Rosemary	5 "
" " Cloves	2 "
" " Neroli	1.5 "
Balsam Peru	5 "
Storax [liquid]	5 "
Alcohol [deodorized]	q. s.

India-Rubber Plasters.

MESSRS. A. SCHNEEGANS and M. CORNEILLE, pharmacists of the Town Hospital of Strassburg, state that they have for some time past been experimenting with a view to replacing purchased caoutchouc plaster with plasters made more economically on the premises, and in this they claim to have succeeded, plasters made according to the formulæ published by them being actually in use and much appreciated in the clinic of the hospital.

The method of operating is described as very simple, requiring no special apparatus, and such as to be remunerative in an ordinary pharmaceutical laboratory. As the number of preparations that can be made with advantage by the pharmacist is daily decreasing, the authors considered it desirable to let the result of their experiments be known.

The basis of the plasters adopted is a mixture of lanolin, benzoated tallow, caoutchouc, and dammar resin in variable proportions. The proportions of caoutchouc and dammar resin are kept as small as possible consistent with securing a good adherent mass; the lanolin and tallow preponderate, which excludes irritating action upon the skin. A slight addition of glycerin prevents the plaster from becoming dry and brittle under the action of the atmosphere.

The caoutchouc is incorporated in the form of a solution, which is made by macerating the flake india rubber of commerce in five times its weight of benzin, with frequent agitation. The india rubber swells up at first considerably, but dissolves entirely after three or four days. The following are the formulæ adopted, and the manner of operating:

Zinc Oxide Plaster (20 *per cent*).

Dammar Resin	20 parts.
Benzoated Tallow	25 "
Lanolin	15 "
Caoutchouc	8 "
Glycerin	12 "
Zinc Oxide	20 "

The resin is melted over a bare fire; then the tallow is added, and the whole is strained through three or four thicknesses of gauze. With this mass, whilst still liquid, the lanolin and caoutchouc solution are incorporated under continual agitation. A very homogeneous mass is thus obtained, which is heated with the necessary precautions, over a water-bath, to eliminate the benzin. After complete evaporation of the benzin, which on the large scale can be recovered by distillation, the zinc oxide, previously made into a fine paste with the glycerin, is added. When the mass is uniform it is allowed to stand for a time, while warm, to permit bubbles of air to escape, and it is then spread upon shirting. The mass should not be too warm when spread, or it may soak through the shirting; the thickness of the layer should be from that of a sheet of writing paper to that of a playing card. The plaster is dried in the air during two or three days, then covered with gauze, rolled, and wrapped in paper.

Mercury Plaster (20 *per cent*).

Dammar Resin	25 parts.
Benzoated Tallow	12 "
White Wax	15 "
Lanolin	20 "
Caoutchouc	8 "
Metallic Mercury	20 "

The mercury is extinguished with the lanolin. The mixture, which is at first light gray, darkens during the trituration, and finally becomes blue gray. The resin is melted with the tallow and wax, strained through gauze, the solution of caoutchouc added, and the benzin driven off on a water-bath; to this warm mixture the mercurial lanolin is added and the whole worked up together. It is then allowed to stand at a gentle heat for the escape of air bubbles, and the mass is spread when it has almost lost fluidity. The plasters are kept in tin boxes in a cool place.

Mercury and Zinc Plaster (20 : 10 *per cent*).

Dammar Resin	20 parts.
Benzoated Tallow	12 "
White Wax	10 "
Caoutchouc	8 "
Lanolin	20 "
Mercury	20 "
Zinc Oxide	10 "

The mercury is extinguished with the lanolin, the zinc oxide rubbed in and then added to the lukewarm mixture of the other constituents.

Iodoform Plaster (20 *per cent*).

Dammar Resin	15 parts.
Benzoated Tallow	30 "
Lanolin	20 "
Caoutchouc	5 "
Glycerin	10 "
Iodoform	20 "

Prepared in the same way as the zinc plaster. The iodoform is triturated with the glycerin and added to the mass, suitably cooled to avoid the volatilization of the iodoform. The plaster is preserved in tin cases.

Boracic Acid Plaster (20 *per cent*).

Dammar Resin	20 parts.
Benzoated Tallow	25 "
White Wax	15 "
Caoutchouc	8 "
Lanolin	12 "
Boracic Acid	20 "

The resin, tallow, and wax are melted together, and the solution of caoutchouc added to the mixture while still liquid. After driving off the benzin on a water-bath, the boracic acid, rubbed up with the lanolin, is thoroughly incorporated with the mass.

The formula for Salicylic Acid Plaster corresponds to that for Boracic Acid Plaster.

Ichthyol Plaster (20 *per cent*).

Dammar Resin	20 parts.
Benzoated Tallow	20 "
White Wax	20 "
Caoutchouc	8 "
Lanolin	12 "
Ichthyol (Ichthyol-Sodium)	20 "

The ichthyol is melted upon a water-bath with the lanolin and incorporated with the liquid mixture of the other constituents.—*Pharm. Jour.*, from *Jour. d. Pharm.* von *Elsass-Lothringen.*

Antipyrin Incompatibility.—M. Tardy, a French pharmaceutical assistant, says that in a mixture containing antipyrin and carbolic acid an insoluble oily liquid will separate, and that the upper and watery layer will contain most of the antipyrin, and the lower, oily stratum will contain most of the carbolic acid; that both are somewhat altered in appearance and odor, and that the properties of both are probably impaired.

Cosmetics for the Physician.

THE secrets of the toilet, the arts by which lovely woman hides incipient corrugations, effaces blemishes, and softens and beautifies her cutaneous apparatus and its appendages generally, are rarely investigated by the physician. He contents himself with removing some particularly obtrusive mark, pulling out superfluous hairs, or trying, with spirits and Spanish flies, to fasten in the too deciduous hair. Dr. H. Paschkis, of Vienna, however, has attempted to inaugurate a new era in this line, and has written a book, "Kosmetik für Aerzte," which is intended to enable the physician to add to the æsthetic enjoyment as well as physical welfare of humanity. Paschkis' book is said by a reviewer in the *Deutsche Medizinal Zeitung* to be a thoroughly scientific one. Its formulæ are based upon dermatological knowledge and pharmaceutical experience. As illustrations we are given four formulæ for that popular domestic article, "cold cream." One of them is as follows:

℞ Lanolini 10.0
Boracis 1.0
Aquæ Rosmarini 100.0

M. Sig.: Lanolin milk.

A formula for seborrhœa is the following:

℞ Potassii Carbonatis 10.0
Aquæ Destillat 100.0
Olei Cinnamomi ..... gtt. 2.0
Olei Rosmarini ..... gt. 1.0

M.

For warts our scientific book of beauty prescribes:

℞ Acidi Salicylici 5.0
Collodii 20.0

M.

For sweating feet, 5 to 10 per cent solutions of chromic acid are recommended.

For dandruff and baldness there are, of course, numerous prescriptions; but, we regret to say, no specific is announced. For a simple wash, as preventive of dandruff, we find:

℞ Potassii Carbonatis 2.0
Aquæ 100.0

The formula for Hebra's dandruff water is also given, viz.:

℞ Spts. Ætheris 100.0
Tinct. Benzoini 15.0

M.

Mouth washes and tooth powders are given, the author warning his readers especially against the use of salicylic acid for these purposes.

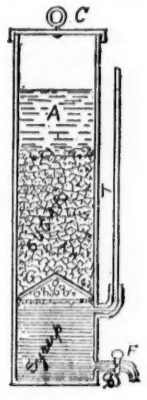
We have not space to describe the merits of Dr. Paschkis' work in further detail. But it is evident that, equipped therewith, the physician can enter on even terms the contest against the balms of Récamier, the secret washes of Lola Montez, and the roborant lotions of the Sutherland and other sisters.—*Med. Rec.*

Examination of Crude Phenol and Cresol.

IT is pointed out that the method of testing crude phenols and cresols, by shaking with a double volume of 9-per-cent soda and measuring the volume of undissolved liquid, either with or without the addition of light petroleum, is untrustworthy because, firstly, the quantity of soda is insufficient for material containing more than 60 per cent of phenol; secondly, cresol, although insoluble in petroleum in the presence of water, is soluble when the petroleum contains 10 to 20 per cent of coal-tar oils; moreover, the higher homologues of cresol are soluble in any case; thirdly, the water in the crude phenol is taken up by the alkali and is reckoned as phenol; and fourthly, material containing even 2 to 3 per cent of naphthalene gives a perfectly clear solution. The method is more workable if 4 volumes of 10-per-cent soda are used, the alkaline layer separated, neutralized with dilute acid, agitated with a measured volume of benzene (benzol), and the volume read off. In Williams' method for examining carbolic powders the quantity of alkali is also insufficient for treating rich material, whilst in Tidy's method not only is this the case, but also the solubility of the coal-tar acids in sodium sulphate is overlooked and there is loss by volatilization of the phenol. In Toth's method the strong alkali, of specific gravity 1.250–1.300, gives rise to a strong solution of the cresoxides, which dissolve large quantities of hydrocarbons; moreover, any light hydrocarbons present could hold the free phenols in suspension, and so prevent their solution in the alkali. For estimating water in crude phenols, agitation of 50 C.c. with 30 to 50 C.c. of benzene (benzol) and 30 C.c. of 50-per-cent sulphuric acid is recommended; the sulphuric acid is better than calcium chloride, which in its turn is better than sodium chloride.—W. W. STAVELEY, in *Chem. Zeit.* and *J. Chem. Soc.*

CONTINUOUS PREPARATION OF SYRUPS BY COLD SATURATION.

M. BOUVET, pharmacist of Autun, describes in the *Répertoire de Pharmacie* for May an apparatus used by him for two years past in preparing syrups by cold saturation. This apparatus consists of a cylinder, of copper or block tin, A, of which the height should be about four times its diameter. At about one-fourth of its height it is divided into two parts by an open frame, G, which is covered with a strainer. A tube, T, is inserted in the manner shown, and serves as a gauge of the height of the liquid in the cylinder. A stopcock, F, and a cover, C, complete the apparatus.



When simple syrup is to be made, the upper chamber is filled with cut or coarsely broken sugar, and water poured over the same. As it flows off by the stopcock the liquid is returned to the cylinder, and this is repeated until it comes off saturated. When this is the case a fresh portion of water is poured on the sugar, care being taken that the latter shall always be in excess.

M. Bouvet says: "I have shown the dividing frame as conical in shape, because it thus affords a larger area of filtration; but, aside from this advantage, a flat one would answer as well. It is not permanently fixed in the cylinder, but should be of such size that when the strainer is put on it and turned under the inferior edge it will retain its position in the cylinder by friction alone. Care should be taken to so arrange the strainer that no liquid escapes from the cylinder except through its meshes."

This apparatus may be used in a similar manner for preparing other syrups, such as orange flower, tolu, tar, etc. The author states that for more than two years he has preserved syrups made with this apparatus in vessels covered with nothing but paper, and there has not been the least alteration; neither fermentation, acidity, nor mould occurring.—*Nat. Drugg.*

PERFUME-MAKING IN NICE.

THE method of making perfumes in Nice is described as follows by the British consul in that town: The first process in the manufacture of perfume from flowers and herbs is the extraction of the essential oil by distillation. A large copper vessel or alembic is filled with water to about two-thirds of its capacity; the flowers to be treated are then introduced, and it is hermetically [*sic*] closed. It is placed on a fire, gas or steam being mostly used for this purpose in Nice. Steam is thus generated in the cylinder, and is carried by means of a pipe into a second cylinder, which is constantly kept replenished with cold water, and is furnished with an overflow cock. The pipe, in its passage through this second cylinder, assumes the form of a coil. This coil ends in a cock at the bottom of the cylinder, from which the volatile essence exudes drop by drop as the steam becomes condensed in its passage through the coil.

In this manner the essence is collected in a small glass vessel, while at the same time the water containing a small portion of the scent, and which still remains in the alembic aforesaid, is itself perfumed, and becomes the rose water or orange-flower water, etc., of trade.

All flowers are not susceptible of this treatment; some of them, such as jessamine, violet, cassie, and tuberose, have to be treated by a different process.

Of the flowers producing essences the orange flower yields 1 Gm. of essence for 1 kilo of flowers. This oil is styled "neroli," and is the principal essence produced in the district between the Var and the Italian frontier.

There are two processes used for the purpose of extracting perfume from flowers which do not contain volatile essence.

The first may be described as the cold process, and the second as the hot process.

The former is generally used for cassie (*Acacia Farnesiana*), jessamine, jonquils, tuberoses, violets, and some other flowers.

Freshly gathered flowers are placed upon a layer of pure lard, a quarter of an inch in thickness, spread over a sheet of glass about 2 feet square, which is framed in wood and forms a tray. These trays, sometimes some forty or fifty together, are then piled upon one another, the flowers are changed every twelve, eighteen, or twenty-four hours, according to circumstances, and the process is thus continued until the lard is sufficiently charged with perfume. Jessamine and tuberose are frequently changed as often as fifty times before the lard is considered to be sufficiently impregnated, cassie and violets from thirty to forty times, and jonquils about twenty times only. In the hot process 20 kilos of grease are placed in a copper vessel, together with some 5 kilos of

flowers; the vessel is then placed over a slow fire, and the contents are well stirred. After allowing the compound to boil for ten minutes, the vessel is left to cool for some hours; an additional 5 kilos of flowers are then added, and the process is repeated until the fat has absorbed the requisite amount of perfume; the hot liquid is then poured through a sieve, and the greasy flower paste that remains is subjected to hydraulic pressure. It is in these two ways that the *pommades* of trade are produced.

The machinery used in the production of *extraits* from the *pommades* is very simple, and the only apparatus calling for special notice is the *batteuse à extraits*, by which the perfume is conveyed from the impregnated fat into the alcohol, and which is shown in our illustration.

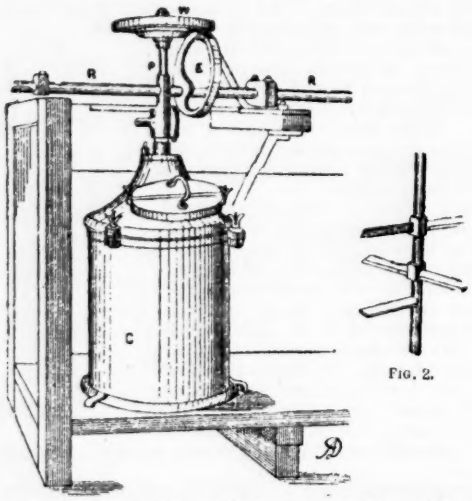


FIG. 2.

The fat is inserted in cylinder C, together with a certain amount of alcohol; there are usually four churns side by side attached to the same connecting rod R, which ends in a wheel connected with the steam engine by means of the usual band; the rod being thus set in rapid motion, the eccentric E lifts, depresses, and rotates the wheel W, which sets the piston P rotating, and alternately rising and falling at the same time. Fig. 2 shows the portion of the piston rod which is contained in the cylinder, and to which horizontal flanges are attached, and it will be readily seen that the churning process obtained by their rotating, at the same time that they rise and fall through the mass of fat and alcohol, is of a most efficient nature.—*Chem. and Drugg.*

Note on Suppositories.

WE reprint here some practical remarks on suppositories from a paper by F. A. Hocking and E. Brooke, read at a recent evening meeting of the School of Pharmacy Students' Association (after *Pharm. Journ.*).

Suppositories are sometimes required of a size for which the ordinary 15-grain mould is unsuitable; in such cases recourse must be had to extemporaneous moulds, some ideas for which, suggested by various writers, may not be out of place here.

A piece of clay flattened out, and holes formed by a piece of wood conical at one end, forms a fairly good mould; but suppositories thus formed require trimming. Hard paraffin may be treated and used in the same manner. Paper fashioned into cones, and placed in sand or other convenient material, forms a very ready and convenient device. Lead foil may be substituted for paper with advantage. A small test tube, filed through at the bottom and embedded in sand, is another method, the suppository being expelled by a glass rod.

For making a hollow gelatin suppository the same method may be adopted as is used for gelatin capsules, which is as follows: A glass tube, with an oval bulb at one end, is dipped into the liquid gelatin mass, taken out, cooled, and the process repeated several times until a sufficient coating has been obtained. The suppository is released by sharply drawing a knife round the neck of the bulb and drawing off the coating; it may then be treated like a hollow cocoa-butter suppository.

A piece of glass tubing, with one end widened to form a funnel and the other end inserted in sand, forms a convenient bougie mould, from which the bougie may be expelled by a glass rod, and the end rounded by the fingers.

Other methods will doubtless suggest themselves to the mind of the ingenious pharmacist.

In the choice of a base, several requirements must be borne in mind. The suppository should melt at the temperature of the body, about 98° F., and at the same time it should be firm and rigid, so as to permit of its being handled without detriment to its shape. A minor but still important point must not be forgotten—namely, in regard to the time the base will remain without becoming rancid, and also its behavior towards active drugs with which it may be incorporated.

Aristol.

ACCORDING to Eichhoff, this is the voluminous reddish-brown, amorphous precipitate which occurs when an aqueous solution of iodine in iodide of potassium is treated with thymol dissolved in a solution of caustic soda. It is di-thymol-iodide, and contains about 45 to 46 per cent of iodine. It is said to be, like chrysarobin, an active but harmless remedy in psoriasis, mycosis, lupus, etc.

The *Chemist and Druggist* reports the following difficulties connected with its use: It seems that the iodine it contains has an irrepressible roving tendency, which leads it to seek independence and select combinations to its own taste from its surroundings. For this reason it decomposes with starch, and therefore cannot be employed in conjunction with the starch paste which is so favorite an application in skin diseases. It is also incompatible with all bodies which have a strong affinity for iodine, as caustic alkalies, carbonates of the alkalies, corrosive sublimate, metallic oxides, ammonia, etc. This, of course, restricts very considerably the use of the remedy, which can only be prescribed as a simple ointment with lanolin, in ethereal solution, or dissolved in oil.

Another exchange furnishes the following illustrative formulæ:

FOR PAINTING ON THE SKIN.

1. Aristol	1 part.
Flexible Collodion	9 parts.

Mix, and dispense in a dark-colored bottle.

2. Aristol	1 part.
Olive Oil	2 parts.
Lanolin	7 parts.

Dissolve the aristol in the oil and mix with the lanolin.

Aristol bougies, suppositories, pessaries, etc., are made with cocoa butter in the usual way.

Dr. Eichhoff (*Monats. f. prakt. Dermat.*, No. 2, 1890) believes the drug to be harmless, and preferable to iodoform so far as it is odorless. He finds it equal to iodoform in all cases in which he has tried it, excepting chancroid. It acts more slowly than chrysarobin or pyrogallic acid in cases of psoriasis, but has the advantage of not possessing the poisonous properties of the latter nor the disagreeable effects of the former. In parasitic skin diseases it is equal to other known remedies and is not irritating. In ulcers of the leg and in the ulcers of the tertiary stage of syphilis it causes more rapid healing than any other known external remedy, and he considers it to be superior to any other known external agent for the treatment of lupus. Dr. Eichhoff used a 10-per-cent ointment made with a petrolate.—*Br. Med. Jour.*, May 24th.

Paracresotinate of Soda.

PARACRESOTINATE of soda, a new antipyretic, is a fine, crystalline powder and has a bitter although not unpleasant taste. It is soluble in 24 parts of hot water, and is not precipitated when the water becomes cold. According to the *Journal de Médecine*, March 23d, 1890, doses of 48 to 60 grains produce no ill effects upon healthy animals. Free perspiration is usually caused by it, but otherwise no effect upon the digestive functions or upon the temperament is noted. In about half an hour after its administration the urine will assume a violet hue, due to the action of chloride of iron, which may be traced in the urine for thirty hours. Paracresotinate of soda has been used in various febrile diseases incident to childhood, and in every case the drug proved itself of unquestionable value as a reliable antipyretic. Its action was especially beneficial in cases of acute gastro-intestinal catarrh occurring in very young children. The following formula is recommended:

℞ Paracresotinate of Soda	15 to 30 grains.
Laudanum	2 to 4 drops.
Cognac	16 minims.
Simple Syrup	1½ fluidrachms.
Distilled Water	7 fluidrachms.

Mix, and give one teaspoonful every two hours.

As an antipyretic, 15-grain doses given three times, one hour apart (for a child of 12), would cause a fall of temperature of 2° to 2½° Fahrenheit within two to four hours.—*Med. and Surg. Rep.*, June 7th, 1890.

Dr. Warburg in Poverty and Distress.—The *Chemist and Druggist* of June 14th brings a communication from Mr. Sydney Holland, of 44 Bryanston Square, W., London, informing the readers of the journal that Dr. Warburg, so well known to the professions of medicine and pharmacy, is living in great poverty. He is at present eighty-six years old, and has two widowed daughters, each with children, to support. The writer accidentally met one of these daughters and found her almost starving, her children ill, and the father quite unable to help her, owing to his own poverty. Dr. Warburg received £200 from the government in 1882 in recognition of the great value of his invention (Warburg's tincture), but this has been used up. Mr. Holland has so far collected £100 for his use, but would like to bring it up to such a sum that he can pay him and his family about 30 shillings per week. After his death the remainder is to be left to his children. It is hoped the laudable object will be accomplished.

Peptones of Meat.

MEAT that has gone through the process of complete peptonization is now recognized as a valuable agent in cases of weakness and debilitated digestion. The value of such a preparation depends, of course, upon the presence of well-defined bodies, chief of which are peptone, albumose, and gelatin, along with other soluble and predigested albuminoids. A method which has for its object the determination of the amount of these constituents has recently been communicated to the *Revue Internationale des Falsifications*, part x., p. 169, by M. Alphonse Denaeyer. The difficulty hitherto, it appears, has been to isolate the gelatin-chondrin, as the author calls it. The albuminoids are more or less closely allied, and but few reagents precipitate one apart from the other. The separation, however, may now be brought about, so the author claims, easily and with comparative rapidity by adopting the following briefly sketched plan. First, precipitation of the peptone of meat with the double iodide of mercury and potassium, which throws down only the albumose; the filtrate after concentration is then treated with excess of saturated solution of ammonium sulphate, and the mixture gradually brought to boiling heat. This results in the coagulation of the gelatin upon the walls of the vessel containing it. Rapid washing with cold water removes the small quantity of entangled iodide, but still leaves a little sulphate. It is then dried and weighed, and subsequently dissolved in hot water, and the ammonium sulphate determined by means of standard barium chloride (normal) and deducted from the first weight found. This is apparently the novel feature of the method. Second, precipitation with saturated ammonium sulphate, which gives albumose and gelatin. Both are thrown upon a tared filter, washed with the sulphate, dried, and weighed. The adhering sulphate is determined as in the first case, and deducted. Third, preliminary treatment with 95% alcohol to take up kreatin, kreatinin, urea, sarcolactic acid, etc., the amount of which may be got at by filtering the alcohol, evaporating, and weighing the residue. The portion insoluble in spirit is dissolved in water and precipitated with phosphotungstic acid, which throws down albumose, peptone, and gelatin. These are dried and weighed on a tared filter; the ash is afterwards determined and the weight deducted. As will be seen at a glance from these data, the amount of each constituent may be readily calculated. Practice will show how far the method may be depended upon; it certainly appears to be convenient in operation, and the author has obtained results agreeing closely with those obtained from the estimation of the nitrogen. Appended are some of the results obtained, which give also an idea of the relative composition of different commercial preparations.

Designation.	Peptone of purified meat albumen.	Peptone of egg albumen.	Peptone direct from meat.
Peptone	37.675	34.700	25.857
Albumose	31.300	53.350	15.964
Gelatin	None.	None.	9.826
Definite compounds	5.525	5.930	29.972
Mineral salts	8.285	1.025	18.386
Water	10.350	4.625	None.
Insoluble	9.965	3.980	None.

—*Lancet*, May 31st.

The Cassis Trade in Burgundy.

BY the short name "cassis" they mean in France a pleasant sort of cordial made with black currants, which at first was considered to be possessed of remarkable medicinal properties, but is now used like curaçao or anisette, and occasionally employed in pharmacy for disguising ill-tasting medicines. Somehow luxuriant Burgundy has secured almost a monopoly of the cassis trade, with Dijon as its headquarters. In 1841 there was but one firm there, with the appropriate name of Lagoutte, which, starting with the output of a hundred gallons, turned out three years later six thousand gallons. Such success attracted competitors by the score. In 1860 there were 29 firms, with an aggregate production of 75,000 gallons, and last year Dijon alone had 34 cordial manufacturing firms, estimated to place on the market one million gallons a year. The price of the berry, of which about 40 ounces go to the gallon of cordial, has considerably varied since 1841. It was at first 3*s.* a hundredweight, gradually rose to 30*s.* in 1858, and is now worth 12*s.* to 15*s.* Nowadays they use the fresh berry almost altogether, and jealously guard the secret of their formulæ. But some old Burgundian recipes, of the time when cassis was a medicine, are not without interest, and no doubt would yield a first-rate cordial, if a little expensive. They made two sorts, the red and the green, according to the following formulæ:

RED CASSIS.

Black Currants (withered on the bush)	1 pint.
Brandy	4 pints.
Sugar	2 pounds.
Water or Wine	2 pints.

Infuse the berries in the brandy, press out the marc, add the syrup, set aside for a while, and filter.

GREEN CASSIS.

Fresh Black-Currant Leaves	6 ounces.
Rectified Wine-Alcohol	35 "
Water	35 "
Sugar	35 "
Orange-flower Water	1 ounce.

Macerate the leaves in the alcohol, press out the liquor, and wash the leaves with one-half of the water; with the other half make a syrup, add it and the orange-flower water to the tincture, and filter.

For the green cordial it is unfortunate that in some countries black-currant leaves should have a bad smell, and in others no smell at all. The berries, on the contrary, while not being everywhere equally fragrant, generally make a pleasant cordial.

Capsules for Treatment of Gonorrhœa.

IN the *Medical News* for June 14th, Dr. J. W. White, of the University of Pennsylvania, recommends the use of the following mixture, in capsules, for treatment of acute urethritis. In about two-thirds of his cases the discharge ceased within a week. In the majority it was necessary also to use an injection, and for this he recommends 2 to 10 grains of sulpho-carbolate of zinc in a 10 to 15-per-cent solution of peroxide of hydrogen.

Salol	3½ grains.
Oleoresin of Cubebs	5 "
Balsam of Copaiba (Para)	10 "
Pepsin	1 grain.

The Salts of Hypoiodous Acid.

KNOWING, as we do, that iodine is able to displace chlorine from chlorates, forming the more stable iodates, we should naturally expect that the iodine compounds containing a relatively smaller proportion of oxygen would still, to some extent at least, exhibit a greater stability than the corresponding chlorine compounds.

The hypochlorites are very unstable, but are still capable of practical use, and therefore we might very reasonably expect that the hypoiodites would be sufficiently stable for preservation and use. Experience shows this to be the case. The hypoiodites which I have prepared and examined as being useful in medicine are those of calcium, potassium, and sodium.

The solution of calcium hypoiodite, which is analogous to a solution of the chlorine compound commonly known as bleaching lime, has been in use for some little time now under the name of "Liquor calcis iodinatæ." It is an excellent and almost tasteless preparation for internal administration. It is much superior to the tincture of iodine, when it is desired to administer free iodine, because the iodine is not set free until it reaches the acid stomach, and thus the action of iodine on the mouth and throat is avoided. Wishing to obtain a stronger solution for antiseptic purposes, I have recently been examining the hypoiodites of potassium and sodium. These, like the analogous hypochlorites, are obtained only in conjunction with the iodides in equal molecules (KI + KOI), etc.

The potassium hypoiodite (Liquor potassæ iodinatæ) affords a most useful antiseptic and parasiticide solution. Each ounce of this solution contains about 28 grains of iodine, in the form of hypoiodite of potassium, which is at once decomposed, yielding free iodine, by any dilute acid. This liquid, containing so large a proportion of iodine in so loosely combined a form, is obviously a most powerful antiseptic. The ease with which it gives up its iodine is shown by the fact that the acidity of paper or calico is often enough to set free iodine, which colors the starch present. Acidity of the skin in some cases has a similar effect.

Liquor potassæ iodinatæ can be applied undiluted to the unbroken skin, but causes smarting, unless diluted, when applied to a raw surface. Liq. potassæ iodinatæ can also be given internally in small doses (5 or 10 minims) diluted.

The hypoiodites, when shaken up with olive oil, form soaps, propenyl hypoiodite [$C_3H_5(OI)_3$] being probably formed instead of propenyl alcohol or glycerin [$C_3H_5(OH)_3$], as happens when fats are saponified by the caustic alkalies.

The soapy liniment formed by shaking together equal parts of Liquor potassæ iodinatæ and olive oil is a much better preparation than the "Linimentum potassii iodidi cum sapone," B. P., since it contains iodine in a much more active form. A dilute acid added to this liniment sets free the iodine.—HUGH WOODS, M.D., in *Br. Med. Journ.*

Compound Belladonna Liniment.

DR. JOHN C. BERRY recommends in the *Medical Record* of June 14th, 1890, the employment of the following liniment for the relief of pain in rheumatic affections.

It is composed of liniment of belladonna, 7 parts, and 1 part of chloroform of belladonna. The British formulæ for the above are:

Belladonna Liniment.—Percolate 20 ounces of powdered belladonna root with rectified spirit, dissolving in the percolate 1 ounce of camphor, and obtaining 30 ounces of liniment.

Chloroform of Belladonna.—Twenty ounces of bruised belladonna root are macerated with 1½ ounces of strong solution of ammonia and 20 ounces of distilled water (previously mixed) for four hours; dry, and reduce to No. 40 powder. Macerate for twenty-four hours in 20 ounces of chloroform in a percolator provided with a tap, then percolate slowly, adding more chloroform until 30 ounces are obtained.

The method of application is to dilute this compound with 1 to 2 parts of pure chloroform and apply by sprinkling it on spongio-piline wrung out of hot water. This is then applied firmly to the affected joint for five minutes and followed with cotton and oiled silk.

Tasteless Fluid Extract of Cascara Sagrada.

	Parts.
Cascara Sagrada, in No. 40 powder	100
Magnesia, calcined	1
Alcohol	100
Water	q. s. 100

Mix the alcohol and water in the proportions of 2 parts of alcohol to 3 parts of water, and moisten the mixed powder thoroughly with the menstruum, then let it stand until the bitterness has disappeared, and pack in a cylindrical percolator, not too firmly, and pour on the menstruum. When the liquid begins to drop from the percolator, close the lower orifice and proceed according to the U. S. Pharmacopœia method of preparing fluid extracts.

This extract carefully prepared has, according to Mr. H. M. Beck, a pleasant taste, and is quite as active as the bitter fluid extract. Mr. Beck states that the tonic property of the bitter extract may be destroyed by the magnesia, but this can be remedied by combining it with some substance having tonic properties, such as nux vomica or cinchona. The organic constituents of tasteless extract are volatile and fixed oils, a yellow crystalline and sublimable substance, glucose, brown coloring matter, yellow, red, and brown resins, tannin, and a second crystalline substance.—[*Proceed. Calif. Pharm. Soc.*] *Chem. and Drugg.*

The Therapeutic Uses and Toxic Effects of Cannabis Indica.

A VALUABLE contribution to the literature of Indian hemp is a paper with this title, published in the *Lancet* for March 22d, 1890, by Dr. J. Russell Reynolds. In explaining the occasional toxic effects of this drug, two things must be remembered: First, that, by its nature and the forms of its administration, Cannabis indica is subject to great variations in strength. Extracts and tinctures cannot be made uniform, because the hemp grown at different seasons and in different places varies in the amount of the active therapeutic principle. It should always be obtained from the same source, and the minimum dose should be given at first and gradually and cautiously increased. The second important fact to keep in view is that individuals differ widely in their relations to various medicines and articles of diet—perhaps to none more than to substances of vegetable origin, such as tea, coffee, ipecacuanha, digitalis, nux vomica, and the like. In addition to the purity of the drug, the possibility of idiosyncrasy must be borne in mind as calling for caution in giving Indian hemp. By gradually increasing the dose and habituating the organism to its use, the use of Cannabis indica may be pushed to 3 or 4 grains at a dose with positive advantage. But in Dr. Reynolds' experience a grain would bring about toxic effects in the majority of healthy adults; and a quarter of a grain has done the same, but never a fifth, which is the proper amount with which to begin the use of the drug among grown persons, a tenth of a grain being the proper initial dose for children. The best preparation for administration is the tincture—1 grain to 20 or 10 minims—dropped on sugar or bread. The minimum dose should be given, as before stated, repeated every four or six hours, and gradually increased every third or fourth day, until either relief is obtained or the drug is proved useless. With such precautions, Dr. Reynolds states he has never met with toxic effects and rarely failed to ascertain in a short space of time the value or uselessness of the drug.

Its most important results are to be found in the mental sphere, as, for instance, in senile insomnia with wandering. An elderly person (perhaps with brain softening) is fidgety at night, goes to bed, gets up, thinks he has some appointment to keep, that he must dress and go out. Day, with its stimuli and real occupations, finds him quite rational again. Nothing can compare in utility to a moderate dose of Indian hemp at bedtime—a quarter to a third of a grain of the extract. In alcoholic subjects it is uncertain and rarely useful. In melancholia it is sometimes serviceable in converting depression into exaltation; but, unless the case has merged into senile degeneration, Dr. Reynolds does not now employ Cannabis indica. It is worse than useless in any form of mania. In the occasional night restlessness of general paretics and of sufferers from the "temper disease" of Marshall Hall, whether children or adults, it has proved eminently useful.

In painful affections, such as neuralgia, neuritis, and migraine, Dr. Reynolds considers hemp by far the most useful of drugs, even when the disease is of years' duration. In neuritis the remedy is useful only in conjunction with other treatment, and is a most valuable adjunct to mercury, iodine, or other drugs, as it is in neuralgia when given with arsenic, quinine, or iron, if either is required. Many victims of diabolical migraine have for years kept their sufferings in abeyance by taking hemp at the threatening or onset of the attack. In sciatica, myodynia, gastrodynia, enteralgia, tinnitus aurium, muscæ volitantes, and every kind of so-called hysterical pain, Cannabis indica is without value. On the other hand, it relieves the lightning pains of ataxia, and also the multiform miseries of the gouty, such as tingling, formication, numbness, and other paræsthesiæ.

In clonic spasm, whether epileptoid or choreic, hemp is of great service. In the eclampsia of children or adults, from worms, teething (the first, second, or third dentition), it gives relief by itself in many cases. Many cases of so-called epilepsy in adults—epileptoid convulsions, due often to gross organic nerve-centre lesions—are greatly helped by Cannabis indica when they are not affected by the bromides or other drugs. Take, for instance, violent convulsions in an overfed man, who is attacked during sleep, a few hours after a hearty supper, the attacks recurring two or three times an hour for a day or two, in spite of "clearing the primæ viæ" or using bromine or some other classic drug. These attacks may be stopped at once with a full dose of hemp. In brain tumors or other maladies in the course of which epileptoid seizures occur, followed by coma, the coma being followed by delirium—first quiet, then violent—the delirium time after time passing into convulsions, and the whole gamut being repeated, Indian hemp will at once cut short such abnormal activities, even when all other treatment has failed. In genuine epilepsy it is of no avail. In cases where it has seemed to do good, the author doubts the correctness of the diagnosis and suspects organic lesion or eccentric irritation. In tonic spasms—such as torticollis and writer's cramp—in general chorea, in paralysis agitans, in trismus, tetanus, and the jerky movements of spinal sclerosis, Cannabis indica has proved absolutely useless. At the same time it is most valuable in the nocturnal cramps of gouty or old persons, in some cases of spasmodic asthma, and in simple spasmodic dysmenorrhœa. Thus it will be perceived that for the relief of suffering, quite apart from a curative effect, hemp must ever be held in high esteem and ranked with the poppy and with mandragora.—*N. Y. Med. Jour.*, June 7th, 1890.

Two Methods for the Direct Determination of Chlorine in Mixtures of Alkaline Chlorides and Iodides.

FROM a paper on this subject by F. A. Gooch and F. W. Mar (in *Chem. News*, May 30th), we take the following summary, referring for details to the original:

First Method.—To the solution of the alkaline chloride and iodide diluted to about 400 C.c. in an Erlenmeyer flask capable of containing a liter, are added 10 C.c. of sulphuric acid of half strength with 2 Gm. of ferric sulphate (either in the form of iron alum, or ferrous sulphate oxidized in concentrated solution by about 0.3 C.c. of nitric acid) and 3 C.c. of nitric acid. A trap (allowing gas to escape, but preventing air from entering) is hung in the neck of the flask, and the liquid is boiled until the steam which escapes no longer gives to red litmus paper, after two minutes' exposure, the characteristic gray-blue due to traces of iodine. Then 1 C.c. more of nitric acid is added, and the test for iodine again made. When no iodine is found in the escaping vapor, silver nitrate is added in excess to the contents of the flask, the precipitate is settled, collected in a perforated crucible on asbestos, dried, and weighed as silver chloride.

Second Method.—The solution of the chloride and iodide contained in an Erlenmeyer flask is diluted to 400 C.c.; 10 C.c. of sulphuric acid of half-strength are added, and the vapor from 2 Gm. of sodium nitrite acted upon by dilute sulphuric acid (preferably in a simple generator) is passed with reasonable rapidity into the agitated solution. The liquid is boiled until colorless, and still further until litmus paper placed in the steam gives no reaction for iodine after an exposure of two minutes. The contents of the flask are treated with silver nitrate, and the precipitated chloride is treated exactly as in the first method.

Both methods are convenient and precise.

Preparation of Very Active Platinum Black.

THE catalytic action of platinum black differs considerably with the method employed for preparing the metal in this peculiar form, the product obtained by decomposing a hot solution of platinic sulphate with alcohol exhibiting this property in a greater degree than that prepared by boiling a solution of platinic chloride with sodium carbonate and sugar, or by precipitating the metal with zinc and hydrochloric acid. The author had occasion to require a very powerful catalytic agent, and after making a number of experiments succeeded in obtaining a suitable product by proceeding in the following manner: 50 Gm. of platinic chloride in 50 to 60 C.c. of water are mixed with 70 C.c. of 40 to 45 per cent formaldehyde, and treated gradually and with constant cooling with 50 Gm. of caustic soda in 50 C.c. of water. After standing for twelve hours the mixture is filtered and the precipitate washed. The filtrate, which at first has a yellow color, assumes a black color as soon as the greater portion of the salts (sodium chloride and sodium formate) has been removed. This is due to the fact that part of the precipitate dissolves in water at this stage; if, however, the black mass is allowed to drain on the filter, it rapidly undergoes oxidation and becomes insoluble, after which the washing can be completed without further loss. The precipitate is then pressed and dried over sulphuric acid.—O. LOEW, *J. Soc. Chem. Ind.* (Abstract).

Medicinal Gelatins.

THESE preparations are indicated in superficial inflammatory affections when the skin is swollen, wet, and itchy. Very high temperature and profuse sweating forbid their use. For a general basis the following formula is given—the first series of figures gives a firmer consistence:

	Parts.	Parts.
℞ Zinc Oxide	15	10
Gelatin	15	30
Glycerin	25	30
Water	45	30

1. Cerussa, iodide of lead, white precipitate, sulphur, iodoform, chrysarobin in fine powder, may be mixed in any proportion required. From 5 to 10 per cent added to soft zinc gelatin is recommended.

2. Carbolic and salicylic acids, resorcin, naphthol, creosote, and sulphide of potassium may be added to the hard gelatin basis in any proportion up to 10 per cent.

3. Fats, balsams, tars, and ichthyol all make the basis softer. The proportion added is usually from 10 to 20 per cent.

4. If we wish to combine drugs in rules two and three, then the sum of the proportions must be attended to. For example, if resorcin and salicylic acid were both ordered we should not prescribe more than 5 per cent of each if we wish the gelatin to form a good covering.

5. Powders may be combined in any proportions.

6. Tannin, pyrogallol, and oxide of mercury cannot be added to the basis.

7. Corrosive sublimate up to 3 per cent, camphor, chloral, and camphor-chloral all to 2 per cent, ext. Cannabis indica from 2 to 5 per cent, may be used with soft zinc gelatin.

The different glues should be dispensed in pots, which are to be put in boiling water when the preparation is to be used. It is to be painted on the skin with a long-haired brush.—*Deutsch. Med. Zeit.*

Physiological Action of the Active Principles of Jequirity.

KLEIN has shown that the poisonous properties of the seeds of *Abrus precatorius* (jequirity) cannot be due to a bacillus, and Warden and Waddell ("Non-Bacillar Nature of Abrus Poison," Calcutta, 1884) showed it to be due to the action of a poisonous proteïd. The proteïds in the seeds are two in number, a globulin and an albumose, and the present paper relates to the physiological action of the first of these. The proteïds were obtained by extracting the crushed seeds with a 15-per-cent solution of sodium chloride; they were precipitated from this extract by saturation with ammonium sulphate; the precipitate was redissolved by adding water, and from this solution the globulin was precipitated by dialysis, collected, washed, and dried.

The actions ascribable to this globulin are the production of local œdema and inflammation when subcutaneously injected or applied to the eye, the presence *post mortem* of petechiæ beneath the serous membranes, and the occurrence of hæmorrhagic gastro-enteritis. It also produces a remarkable fall of body temperature after subcutaneous injection, and in lethal doses it causes rapidity of breathing shortly before death. It has little or no effect on blood pressure. The activity of this globulin is destroyed by heating the solution to 75° or 80°, the temperature at which it enters into the condition of a heat coagulum.—S. MARTIN and R. N. WOLFENDEN in *Proc. Roy. Soc.* (and *J. Chem. Soc.*).

Amending the Odor of Naphthalin.

YEARS ago we pointed out the peculiarity of naphthalin to assume a very distinctive and rather agreeable odor when intimately mixed with very small quantities of certain aromatics, such as essential oils.

Since then naphthalin has become an important article of commerce. It has largely replaced camphor for the extermination of moths, for use in urinals and other similar purposes. As a moth exterminator its own strong and disagreeable odor was much objected to, and it seems that combinations of it with certain odorous oils, though agreeable, had too penetrating an odor, at least for wardrobes. Mr. Rothe, of Ems, recently found that when a little camphor is melted together with naphthalin, the resulting compound acquires nearly altogether the odor of camphor, while it fully retains its moth-destroying properties.

Apparatus for Clinical Estimation of Urea.

C. W HEATON and S. A. VASEY describe in the *Lancet* of May 10th a simple apparatus used by them in hospital work for estimation of urea. Its advantage is that it can be easily constructed, and that its maximum error of calculation is not so great as to render it unreliable. The essential apparatus are the usual pharmaceutical measures, a thistle funnel, about a foot of glass tubing, and two bottles with stoppers.

1. An 8-ounce bottle is fitted with a thistle funnel and bent glass delivery tube as though for the preparation of hydrogen, the lower end of the funnel tube being bent upward to prevent gas from entering. 2. A small basin or breakfast cup may be used as a pneumatic trough, a 4-ounce bottle being filled with water and inverted in it in such manner that the end of the gas-delivery tube can readily be brought under the mouth of the bottle. 3. A 40-per-cent solution of good commercial caustic soda may be prepared by dissolving one-half pound avoirdupois in water, and when cold adding water enough to make 1 pint (imperial).

Into the gas generator pour, by means of the funnel, 1 fluidrachm of bromine, washed in by 10 fluidrachms of the soda solution. The generator should then be immersed in cold water, and the inverted bottle of water be placed over the delivery tube. Two fluidrachms of urine (measured carefully) are added and washed in by exactly 1 fluidrachm of water. The 3 drachms so added will, of course, displace a corresponding amount of air in the receiving bottle. This is allowed for in subsequent calculation. The generator is to be gently shaken, and after effervescence has subsided the air and nitrogen in the receiving bottle will represent the nitrogen evolved by the reaction plus the 3 drachms of displaced air above referred to.

Keeping the generator at the temperature of the surrounding air, when the evolution of gas ceases the receiver is removed by first covering its orifice with the thumb or a slip of glass, and placed, mouth upward, on the table. After deducting 180 (which may be taken as 200) minims due to air displaced by the tube, each 100 minims of water required to fill the receiver represent 0.25 per cent of urea in the urine examined. If the urine contains more than 3 per cent of urea, it is best to dilute it with an equal volume of water before making the determination.

The following table gives the percentage of urea corresponding to the volume of gas liberated, as shown by the quantity of water required to fill the bottle:

Minims of Water Required.	Percentage of Urea.	Minims of Water Required.	Percentage of Urea.
200	0.00	900	1.75
300	0.25	1,000	2.00
400	0.50	1,100	2.25
500	0.75	1,200	2.50
600	1.00	1,300	2.75
700	1.25	1,400	3.00
800	1.50		

The Poisonous Constituent of Castor-Oil Seeds.

A DIASTATIC ferment called "*ricin*" is extracted from castor-oil seeds as follows: Fresh shelled seeds are ground to a powder and agitated with a 10-per-cent solution of sodium chloride. The solution is filtered, saturated at the ordinary temperature with magnesium sulphate and sodium sulphate at the same time, and then allowed to stand. Large crystals of the two sulphates separate out, and in addition a white amorphous precipitate which can be readily separated from the crystals and collected. This is the substance "ricin." It is purified by repeated dialysis at a low temperature, and then dried in vacuum over strong sulphuric acid. Thus prepared it forms a white, friable powder, free from taste and smell, and very poisonous. It still contains 10 to 20 per cent of sulphates. It loses its toxic properties when boiled, but keeps perfectly in the substance. A 10-per-cent solution of sodium chloride is the best solvent for it. It appears that similar poisonous albuminoid bodies exist in other species of *Ricinus*, and also in the seeds of *Croton Tiglium* and of *Jatropa Curcas*.—H. STILLMARK in *Pharm. Centralh.* and *J. Soc. Chem. Ind.*

Wood as a Source of Human Food.

In an address at Heidelberg by Victor Meyer, it is announced "that we may reasonably hope that chemistry will teach us to make the fibre of wood a source of human food." What an enormous stock of food, then, will be found, if this becomes possible, in the wood of our forests or even in grass and straw! The fibre of wood consists essentially of cellulin, $C_6H_{10}O_5$. Can this be made to change into starch? Starch has exactly the same percentage composition, but, as every one knows, it differs very much in its properties, and the nature of its molecule is probably much more complex. Cellulin is of little or no dietetic value, and it is not altered, like starch, in boiling water. It readily gives glucose when treated with strong sulphuric acid, as is easily shown when cotton wool, which is practically pure cellulin, is merely immersed in it. Starch gives the same product when boiled with weak acid. The author further quotes the researches of Hellriegel, which go to show beyond dispute that certain plants transform atmospheric nitrogen into albumen, and that this process can be improved by suitable treatment. The production, therefore, of starch from cellulin, together with the enforced increase of albumen in plants, would, he adds, in reality signify the abolition of the bread question. It must be borne in mind, however, that theory, fascinating and promising though it may be, is not always capable of being followed up by practical result.—*The Lancet.*

Sterilization of Water.

Unless extraordinarily resistant, water becomes sterilized if it be at or near the boiling temperature for fifteen minutes. If the same degree of heat be maintained for five minutes, all harmful micro-organisms will have been destroyed. Still less time serves to destroy the disease-producing varieties which are recognized as liable to occur in water. Thus merely raising to the boiling point a clear water containing the micro-organisms of malarial disorders, typhoid, cholera, diphtheria, or of suppurative processes, and allowing it to gradually cool, insures the destruction of these germs. They are also destroyed by keeping the water for from a quarter of an hour to half an hour at a temperature of 70° C.

Occasionally, however, very resistant but harmless bacteria may get into water. The brief heating renders them safe for drinking purposes; but when it is desired to destroy every micro-organism that may be present in a contaminated water, it should be heated for one hour and allowed to cool slowly. Then it may be used for cleansing wounds or for alkaloidal solutions, which will keep indefinitely if no germs be introduced after the solution has been heated.—Chas. G. Currier, M.D., in *Med. Record*, June 14th, 1890.

Oil of Bitter Almonds.

The difficulty of obtaining genuine, pure oil of bitter almonds has become so great that the well-known house of Schimmel & Co. have felt compelled to draw special attention to this matter in one of their recent reports. In most cases the artificial oil, worth 50 cents per pound, is simply substituted for the natural oil, which is worth from $3.50 to $4.50. *Mixtures* of the two kinds are seldom found in the market. The firm especially warns against the French oil, which they invariably found to be the artificial. In 1870 a Paris firm hit upon the idea to add a certain portion of hydrocyanic acid to this, so as to make it the more readily pass for the genuine oil.

In attempting to distinguish the true from the artificial oil, the boiling point and specific gravity are no reliable criteria. The only reliable method is to examine the oil for traces of chlorine. Since the artificial oil is prepared from benzyl chloride, and traces of chlorinated products obstinately adhere to the artificial oil of almonds prepared therefrom, it is only necessary to search for these. The following method is recommended by Schimmel & Co.:

Into a small porcelain capsule, standing upon a plate, is placed a piece of folded blotting paper saturated with the oil to be tested. This is set on fire and the capsule then immediately covered with a half-gallon beaker, the inner walls of which had previously been wetted with distilled water. The gases arising from the combustion, coming in contact with the moisture, are thus dissolved. The beaker is then washed out with a little distilled water, and this liquid, when tested in the usual manner with nitrate of silver, should give neither a white precipitate nor even a cloudiness.

The test for prussic acid, as used by Schimmel & Co., is as follows:

Agitate 10 to 15 drops of the oil with 2 or 3 drops of a 30-per-cent solution of soda. Next add a few drops of a solution of slightly oxidized ferrous sulphate and shake vigorously. Then acidify with dilute hydrochloric acid. This will dissolve all precipitated matter except the Prussian blue which had formed in the reaction.

Diabetic Diet.

Prof. Naunyn, of Strassburg, gives the following rules for the diet of a diabetic person. These rules will be of much practical benefit to those who cannot always consult their physician:

A. *Food.—Meat* of every kind and form, prepared without starch or sugar. Also sweetbreads and calves' brains. Daily meat ration, 1 to 1½ pounds, weighed cooked. In place of meat, eggs may be used as desired. One egg is equivalent to about 2 ounces of meat; the yolk of the egg contains even more nitrogen than meat. Fat may be used in every form. Bread, if at all permitted, may be used to the extent of 1 to 3 ounces per day. Vegetables and fruits are valuable for the organism, since they supply the salts of the alkalies and alkaline earths; but the carbohydrates contained therein render their use advisable only in cases where it is found that they are comparatively harmless. The dextrogyre carbohydrates, viz., glucose, starch, and dextrin, are badly digested by diabetics; but the lævogyres, viz., levulose, inulin (the starch of the Compositæ), inosite, and mannite, are easily and almost completely digested without increasing the sugar. Hence, while the former are dangerous, the latter are harmless. Among vegetables the following are to be recommended: Jerusalem artichoke (Topinambour, from *Helianthus tuberosus*), Chinese or Japanese stachys-tubers (contain much inulin), chicory root, dandelion root, common artichokes, green peas, mushrooms (contain mannite), apples and pears (contain levulose).

B. *Drink.*—Milk, particularly sour milk [buttermilk], kefir, or kumyss, 1 to 1½ pints, may be used daily, if it is found that the ingestion of milk-sugar is without influence upon the excretion of glucose. (In some patients this is the case, in others not.) Light wines, claret, brandy or whiskey [schnapps] with water are permitted; of the heavier wines, dry sherry. Beers are dangerous. Bitter liquors are permitted; but sweet ones must be avoided. Cocoa is forbidden; but tea or coffee (without sugar) is allowed.—*Med.-Chir. Rundschau.*

Dose of Tincture of Nux Vomica.

Mr. Jonathan Hutchinson (*Archives of Surgery*, January, 1890, p. 280) says he has for many years prescribed the tincture of nux vomica very freely indeed. He thinks it the best of all tonics, for it very rarely disagrees, and he has never known it to produce poisonous effects. He generally gives 10 minims three times a day to an adult, but often double that dose. He has given 5 minim doses to a child of ten, and has, for experiment, taken himself a single dose of 30 drops and realized no symptoms of strychnia poisoning whatever.

He believes the tincture of nux vomica to be a safer and more convenient form than any of the solutions of strychnia, and it has also the advantage of not exciting alarm in the patient. He says it may be taken for months together, and does not diminish in efficiency. Mr. Hutchinson has had many patients who have taken more than was intended and yet never so far with any serious ill result.

He relates two cases. A gentleman, 33 years old, took by mistake five consecutive doses of 40 minims three times a day instead of 10 minims during the same time as ordered. The only ill result was that the head had been made to feel dull and the eyes heavy, as if he had been drunk over-night. There was no muscular twitching.

In the second case the patient took 40-minim doses of the nux vomica tincture. He continued it three times a day for four doses in succession. The symptoms were exactly as in the other case—a dull feeling in the head, but no twitchings. He felt "wonderfully better for it."

Volumetric Estimation of Tannin in Wines.

A ten-per-cent solution of tartaric acid is made very slightly alkaline by the addition of ammonia, and to this is added a neutral lead acetate solution until the precipitate which first forms just ceases to be redissolved. After being filtered, the solution is ready for use. This solution completely precipitates tannin from its solutions. It is standardized by means of a solution of pure tannin as follows: 25 C.c. of a tannin solution of 5 Gm. per liter are placed in a flask with 4 or 5 drops of ammonia. The lead aceto-tartrate solution is run in, a couple of cubic centimeters at a time, from a burette. After each addition a drop of the solution is placed on a double filter paper, the upper one of which retains any precipitate that may have been conveyed by the drop, while a drop of sodium sulphide is brought into contact with the liquid in the lower paper. A brown stain, due to excess of lead, only appears after the tannin is completely precipitated. After a preliminary estimation, the titration is more accurately made by adding a few drops at a time of the lead solution, when near the end of the process. The estimation of tannin in wine is made in precisely the same manner. The method is very rapid, and gives very satisfactory results.—L. Roos, Cusson and Giraud, *Journ. de Pharm.* and *J. Chem. Soc.*

A New Indicator for Acids and Alkalies.

A NEW indicator has been recently proposed by R. Zalozieckl (in *Chem. Zeit.*). It is a substance described a short time ago by Doebner, and known as *alpha-naphtholbenzeïn*. It is prepared by adding 2 molecules of alpha naphthol and 1 molecule of benzol trichloride to some benzol contained in a flask (the benzol acts as a diluent, to diminish the energy of the reaction), and allowing it to stand for twenty-four hours. The flask is then warmed to 30° to 40° C., and the benzol and excess of benzol trichloride distilled off by means of a current of steam. The resulting colored mass is purified by solution in soda and fractional precipitation with hydrochloric acid. This is repeated several times, and the pure coloring matter finally washed with water. When pure and dry, it constitutes a reddish-brown powder. Traces of alkalies dissolve this with a strong green color; dilute acids change this to reddish yellow. The change from the latter to green is more sharply seen. Hence it is best to use the reagent when titrating with *acids*. The indicator belongs to the same class as phenolphthalein. It is exceedingly sensitive to carbonic acid, which affects it almost like a mineral acid.

On the Most Suitable Strength of Reagents.

R. BLOCHMANN suggests that in order to introduce some uniformity into the strength of laboratory reagents, the solutions should have a relation to the molecular weight of the substance dissolved, and has drawn up tables giving a convenient strength whilst keeping to the principle of equivalent weights. The following series are made up so as to be of *twice the normal* strength: Hydrochloric acid, nitric acid, sulphuric acid, acetic acid, oxalic acid, tartaric acid, caustic potash and soda, and ammonia, ammonium sulphide, chloride, and carbonate, sodium carbonate and acetate. The following are recommended to be of *normal strength:* Barium, calcium, and ferric chloride, potassium, magnesium, and copper sulphate, sodium phosphate, lead acetate, potassium chromate, and potassium ferrocyanide. *Half normal* solutions are to be made with platinic and mercuric chloride, silver and barium nitrate. Reagents used for oxidation and reduction are to be *normal, i.e.*, equivalent to 8 Gm. of oxygen in the liter. Such substances which do not readily dissolve in water are to be used in saturated solutions.—Abstract from *Berichte*, 1890, 23.

New General Reaction for Nitrogen in Organic Substances.

PROF. E. DONATH communicates to the *Chemiker Zeitung* an important new reaction for nitrogen which is of great practical value, especially for preliminary research. We reprint a portion of the paper here (after *Chem. News*):

The experiments which the author has performed with a number of substances belonging to the most different groups have almost completely confirmed his supposition that when organic substances are reduced by energetic oxidation in an alkaline solution, the nitrogen appears as nitrous acid. The substances named below were introduced into small flasks in quantities of from 0.03 to 0.05 Gm. (according to the proportion of nitrogen) with 0.5 to 1 Gm. powdered permanganate, and from 15 to 20 C.c. of potassa lye, perfectly saturated at the ordinary temperature, were added and heated to a boil, adding, if needful, more permanganate until, on further boiling, the liquid remained violet or greenish blue.

The flask was then allowed to cool, the liquid moderately diluted with water, which occasions heating; the excess of permanganate is reduced by the addition of a few drops of pure alcohol, and the manganese hydroxide is filtered off. The filtrate is then tested [for nitrous acid] by the admixture of freshly prepared solution of potassium iodide and acidulation with hydrochloric acid, by means of carbon disulphide or zinc iodide and starch.

In addition, the filtrates were tested for oxyacids in general by means of diphenylamine in a sulphuric solution, and for nitric acid in particular by brucine and concentrated sulphuric acid. These experiments showed that in all the substances examined the reactions for nitric acid were produced with the greatest distinctness, but that the brucine and sulphuric acid reaction for nitric acid did not succeed in all cases. In the case of coal, potassium ferrocyanide, and all bodies of the aromatic group, the reaction was more difficult and tedious.

The bodies examined were:

Urea, albumin, potassium ferrocyanide, amygdalin, indigotin, coal, pepsin, quinine sulphate, magenta, binitrobenzol, tropæoline, betaine hydrochlorate, asparagin, ammonium sulphate, casein, "Biebrich scarlet," binitronaphthalin, naphthylamine, nitrosonaphthol, and nitrosotoluol.

As these bodies belong to nearly all the most important groups of organic bodies, the conclusion is justified that the above-described oxidation with permanganate and strong potassa-lye, and the consequent formation of nitrous acid, is a new universal reaction for nitrogen in organic compounds.

Testing Oil of Cinnamon.

SINCE the quality and value of oil of cinnamon depend entirely upon the amount of cinnamic aldehyde it contains, Schimmel & Co. recommend the following method for determining it:

Mix 75 Gm. of the oil in a good-sized flask with 300 Gm. of a boiling solution of bisulphite of sodium containing 30 per cent of the salt. The acid sulphite combination with the aldehyde ($C_6H_5.CH.CH.COH.HNa.SO_3$) separates in the form of a gelatinous precipitate. Shake this vigorously and allow it to stand a short time. If heat is developed during the reaction, which happens if the oil is rich in aldehyde, cool the flask by the affusion of cold water. Now add about 200 Gm. of hot water and warm the mixture on a water-bath, frequently shaking, until the compound formed is entirely dissolved and the non-aldehydes float on top of the solution of the aldehyde salt in form of an oily layer. Allow the mixture to become cold, and shake it first with about 200 C.c. and then with 100 C.c. of ether. Separate the ethereal solution of the non-aldehydes, and filter it into a previously tared and good-sized beaker into which a spiral-shaped platinum wire is placed. Evaporate the ether as rapidly as possible by immersing the beaker in hot water. As soon as the liquid ceases to foam or boil up when shaken around, allow it to cool, and weigh. Then place the beaker again into hot water for ten minutes, cool, and weigh again. Continue this until the difference between the last two weighings does not exceed 0.3 Gm. Take the weight next to the last as the correct weight. This weight, deducted from the original weight of the oil, gives the amount of cinnamic aldehyde present.

Schimmel & Co. say that the method of expelling the ether has a great influence upon the accuracy of the result. The non-aldehydes, though volatilized with difficulty, are nevertheless volatile. The ether must therefore be boiled off rapidly, and the beaker must not be allowed to stand in the water-bath longer than is necessary for the evaporation of the ether.

Detection of Carbonic Oxide in the Blood.

ZINC chloride or very dilute platinic chloride solutions produce a bright-red coloration with carbonic-oxide-hæmoglobin, whilst normal blood is colored brown or very dark brown. If the blood is diluted with water, the precipitated hæmatin and albumin are colored. Carbonic oxide blood after standing in cold water for two minutes becomes raspberry-colored, oxyhæmoglobin grayish brown. Twenty-five per cent of carbonic oxide blood was detected by this means. Phosphomolybdic acid or 5 per cent phenol produces a carmine-colored precipitate with carbonic oxide blood, a reddish-brown one with oxyhæmoglobin; 16 per cent of the former can be detected by this reaction. If 15 C.c. of 20-per-cent potassium ferrocyanide solution in 2 C.c. of dilute acetic acid are added to 10 C.c. of carbonic oxide blood, an intense, bright-red coloration is produced; normal blood becomes dark-brown colored with this treatment. If 4 parts of normal blood are diluted with 4 parts of water and shaken with 3 volumes of a 1-per-cent tannin solution, it becomes colored primarily bright red with a yellowish tinge; at the end of one to two hours it has become brownish, and finally has turned gray at the end of twenty-four hours; carbonic oxide blood treated in the same manner is also colored bright red at first, with a bluish tinge, which color, however, remains unchanged. Both of these reactions were observable with 1 per cent carbonic oxide blood in 1 per cent hæmoglobin, and carbonic oxide was detected in air by its means when present to the extent of 0.0023 per cent. Phenylhydrazin produces a bright-red coloration with blood containing carbonic oxide, and a dark-red coloration changing to black with normal blood; the blood is diluted to 1 in 40 for this reaction. If more than 5 drops of the phenylhydrazin solution are added, a grayish-violet coloration is obtained with oxyhæmoglobin, and a rose-red color with carbonic oxide blood. A rabbit died when its blood was three-fourths saturated with carbonic oxide.—A. WELZEL, in *Chem. Centr.* and *Journ. Chem. Soc.*

Ten C.c. of the blood diluted to one-fiftieth are added to 0.2 C.c. of deep yellow ammonium sulphide and 0.2–0.3 C.c. of a 30-per-cent acetic acid, and carefully mixed. The liquid should then react slightly acid. Blood containing carbon monoxide takes a fine rose color, whilst normal blood is greenish-gray or reddish-greenish-gray. The ammonium sulphide is obtained by adding 2.5 Gm. of pure pulverized sulphur to 100 Gm. of freshly prepared, colorless ammonium sulphide.—K. KATAYANA, in *Virch. Arch.* and *Chem. News.*

Oil of Wintergreen.—Schimmel & Co. state that the synthetic oil of their manufacture, which is distilled with steam, always contains traces of water, which accounts for the fact that the specific gravity is liable to variations in the third decimal place. The spec. grav. of the oil, when entirely free from water, is 1.1870 at 15°C., and its boiling point 219°–221°C., the thermometer being entirely immersed in the vapor.

The Effect of Antipyrin on the Solubility of Caffeine.

TANRET has shown that in adding to caffeine nearly its own weight of salicylate or benzoate of sodium the solubility of caffeine in water is greatly increased. In the *Répertoire de Pharmacie* for February 10th, 1890, attention is called to the fact that antipyrin likewise possesses a similar property of increasing the solubility of the salts of quinine, and likewise, added to caffeine, increases the solubility of the latter. It is claimed that it is only necessary to add to the caffeine an equal weight of antipyrin to render the former substance entirely soluble in cold water. With warm water it is claimed that it is possible to dissolve 7½ grains of caffeine in 160 minims of distilled water by the addition of 12 grains of antipyrin, and that the solution so produced is permanently limpid. This increase of the solubility of caffeine by the addition of antipyrin greatly favors its subcutaneous administration, since through its aid 15 grains of caffeine may be dissolved in 3 ounces of water, so that the use of caffeine in neuralgia or migraine will be greatly facilitated by the combination with it of antipyrin; further, the antipyrin may be expected, in these affections, to increase the probability of cure.—*Therapeutic Gazette.*

The Successful Druggist.

"I perused in some recent contemporary of yours the prize essay, 'The Successful Druggist,' with a sort of a tangible smile. A successful druggist has, as a rule, several clerks working in his establishment. The more successful he is the more clerks he employs; but I believe no successful druggist ever did succeed in getting his clerks down to anything like a systematized method of bookkeeping or 'putting down,' as it is called, and perhaps that fact is the very reason that the aforesaid prize essayist did not even mention this most worthy item in the line of success. By way of supplement I would therefore put this advice on record to all clerks, and their employers too: No matter how educated you are, or how glib a salesman, you will be a howling failure if you do not get down to the habit of making an entry of every business transaction. If you keep a sales sheet, enter all sales; if you did not sell for cash, don't trust to luck or memory, but put your sale down in the daybook; if you've sold the last bottle of Brown's Salvation Oil, your only possible salvation lies in entering the item in the want book before you engage in conversation with the next customer. Never trust for one second to memory. Do not load up your memory with anything—put it down, enter it up; keep your mental capacity in trim for something else than the dust of memory. Keep your memory well greased by not taxing it at all."—Correspondent of the *National Druggist.*

Capsicum as a Counter-Irritant.

TINCTURE of capsicum is highly recommended by Dr. H. J. Buck, an English physician, as a counter-irritant for the relief of the pain of neuralgia, rheumatism, subacute gout, pleurodynia, etc. It may be applied with a brush as often as desirable, and its effects are often magical. Instant relief is said to attend its use on the tonsils and uvula in relaxed sore throat.—*Lancet.*

In the same journal for May 17th, Dr. James Sawyer, of Birmingham, says: "I am finding excellent results in practice by the use of some preparations of capsicum as rubefacient counter-irritants. In my hands this old remedy, red pepper, has been successful as a local application in cases of subacute gout, in chronic gout, in chronic articular rheumatism, in muscular rhematism, and also in some cases of bronchial catarrh and chronic bronchitis. After some consideration and observation upon the subject, I decided to employ an ethereal tincture of the drug, and I asked Messrs. Southall to make a new tincture of capsicum of the strength of the alcoholic tincture of the Pharmacopœia, but made with officinal pure ether instead of with rectified spirit of wine. After some satisfactory use of this ethereal tincture in my own experience as a physician, I now venture to recommend the remedy to my brethren. I find an ethereal tincture of capsicum, by reason of the comparatively rapid evaporation of its ether, can be used more freely than an alcoholic tincture as an application to the skin. Furthermore, I think the solvent action of ether upon the sebaceous secretion of the skin makes ether a menstruum preferable to alcohol for drugs designed to affect the cutaneous surfaces, or to produce therapeutic effects through the skin. If a little ethereal tincture of capsicum be gently rubbed upon the back of a hand, it will produce a feeling of warmth, with some sensation of burning and pricking, in about a minute's time, together with an irregular and patchy hyperæmic redness which may last some hours. If the tincture of capsicum be used as a rubefacient in the form of a liniment, an oily admixture gives frictionability, and an equal part of some bland fixed oil may be added. Solution of ammonia or oil of turpentine, or both of them, in such a liniment are good adjuvants if a sharply rubefacient effect be desired. An excellent and powerful rubefacient liniment may be made of equal parts of ethereal tincture of capsicum, liquor ammoniæ, oleum terebinthinæ, and oleum lini. The ethereal tincture may also be applied to the skin upon spongio-piline."

Chlorodyne Poisoning through the Mother's Milk.—A case is reported in the *Australasian Medical Gazette* of a woman who had recently given birth to twins and was suckling them both. One evening she took a dose of chlorodyne for the relief of pain, and soon after taking the drug suckled the infants. The children were found the following morning profoundly narcotized, and died before evening.

Tests for Quinine.—In order to test the purity of quinine sulphate, 0.2 Gm. of that salt is shaken with 5 C.c. of a mixture of 30 volumes of petroleum ether (spec. grav. 0.680) and 70 volumes of chloroform, and filtered. To the clear filtrate 3 volumes of petroleum ether are added. With pure quinine sulphate the liquid remains clear, whereas in the presence of any other alkaloid an opalescence or precipitate is formed.—E. HIRSCHSOHN in *Pharm. Zeit. Russl.;* Abstract in *J. Soc. Chem. Ind.*

To Destroy Roaches.—The *Med. and Surg. Rep.* gives the following: Roaches may be exterminated if the following powder is liberally sprinkled in the cracks and corners of their *rendezvous:*

Borax	37 parts.
Starch	9 "
Cocoa	4 "

M.

Toxic Action of Salicylate of Sodium.—G. B. Barron, M.D., reports in the *Lancet* of May 31st a case in which two or three doses of 15 grains each of salicylate of sodium caused, in a woman aged 26 years, an intense erythematous rash, tingling over the whole surface, swelling of the face and extremities, nervous depression and languor, shallow and rapid breathing, severe headache, a pulse of 120 and temperature of 107°. This was afterwards repeated when the medicine was again used, and a remarkable fact was that the patient had previously taken the salicylate from the same package without disturbance.

Menthol as a Remedy in Vomiting.—Recent reports in the *Therap. Monatshefte* speak very highly of the efficacy of menthol as a remedy for vomiting in infants. The following preparation was used:

Menthol	gr. 15
Alcohol	fl. oz. 1
Syrup	fl. oz. ¾

and the dose given was one teaspoonful every hour, or less frequently.

Cocaine Hydrochlorate and Borax.—At a recent meeting of the Paris Société de Pharmacie (*L'Union Pharm.*, May, p. 210), M. Julliard mentioned that in preparing a collyrium containing hydrochlorate of cocaine and borax, upon mixing the solutions a precipitate was formed, consisting of cocaine which had been thrown out by the soda of the borax. Of course the ordinary method of filtering would here have involved the removal of a certain quantity of the more important constituent. It was pointed out by M. Patein that although borax is neutral towards reagents when in concentrated solution, it becomes alkaline in dilute solution, and it was suggested that the addition of a little boric acid would have maintained the collyrium clear without affecting its properties.—*Pharm. Jour.*

New Analysis of Myrrh.—Oscar Koehler has made a new analysis of myrrh in the laboratory of Prof. Reichardt, of Jena, and reports his results in the *Arch. der Pharm.* The following is a summary:

Myrrh consists of:

1. *Gum*, 57 to 59 per cent. Soluble in water, insoluble in alcohol.

2. *Resin*—a mixture of different resins, in largest proportion a soft resin, of neutral reaction, soluble in alcohol and ether. There are also present two different dibasic resin acids.

3. *Ethereal Oil*, 7 to 8 per cent (former analysts report only 2.18 per cent).

New Method of Generating Oxygen Gas.—A new, though perhaps not economical method of preparing pure oxygen gas is the following, according to George Kassner (in *Chem. Zeit.*): Make a solution of ferricyanide of potassium in peroxide of hydrogen, and introduce it into a flask with delivery tube and connected with a reservoir of solution of potassa. If the latter is allowed access to the solution, drop by drop, oxygen gas will be given up. The reaction is as follows:

$$\underset{\text{pot. ferri-cyanide}}{K_6Fe_2Cy_{12}} + \underset{\text{potassa}}{K_2O} + \underset{\substack{\text{hydrogen}\\\text{peroxide}}}{H_2O_2} =$$

$$= 2\underset{\text{pot. ferro-cyanide}}{K_4FeCy_6} + \underset{\text{water}}{H_2O} + \underset{\text{oxygen}}{O_2}$$

Kola Nut in Sea-Sickness.—Kola has been "boomed" lately, and the Director-General of the Medical Department of the British Navy is assisting in the process. He has communicated to the medical papers a letter from Dr. C. W. Hamilton, in which it is spoken of as "a most

successful remedy" for sea-sickness. Half to one drachm of the seed chewed slowly was followed, in about forty minutes, by complete cessation of the various symptoms of *mal de mer*. Its action in sea-sickness seems to be the giving of tone to the nervous system, proving a stimulant —acting generally and locally. As a good deal of attention is now directed to this drug, it would be advantageous, Dr. Hamilton thinks, if for future trials pharmaceutical chemists would provide a neater, more portable and efficient preparation than the kola seed, which seems reliable only when freshly procured.—*Chem. and Drugg.*

Unguentum Hydrargyri Nitratis, with Vaseline.—Mr. Adolph W. Borchers, Ph.G., as the result of a number of experiments on different oils and fats as bases for this ointment, recommends the following formula:

Neatsfoot Oil	3½ tr. oz.
Vaseline	4 drachms.
Nitric Acid	420 grains.
Mercury	180 "

Mix the oil and vaseline, heat in a water-bath at 200° F., at which temperature add the mercury, previously dissolved in the acid and slightly warmed. Stir occasionally until the reaction is completed, then allow to cool until it begins to thicken, but not permitting it to get cold. Then transfer to a mortar, and triturate briskly until it becomes very light in color.

The ointment so made retains its color and consistence for a long time.—*Proceed. Cal. Pharm. Soc.*

Caledonian Balsam.—At a recent meeting of the Société de Thérapeutique, Dr. Forné called attention to the advantages presented by a preparation that he had named "baume calédonien," and which appeared to consist of a solution of kauri gum in an equal weight of 90-per-cent alcohol (*Jour. Phar. Chim.*, May 1st, p. 504). He stated that it had been used with great success in the treatment of wounds and ulcers of all kinds. When applied to a well cleansed and dried wound it causes a very slight but brief sensation of burning, but after a few moments the solvent evaporates, and the resin is left as a very adherent varnish, which is not affected by friction or contact with water. The preparation can also be used advantageously for fixed bandages in the place of the soluble silicate. It was also said to be superior to tincture of benzoin for the obturation of the cavities in carious teeth. Lastly, a liniment made with equal quantities of baume calédonien and olive oil was recommended as an application to burns. —*Pharm. Jour.*

Soluble Essence of Ginger.—W. H. McGrath, in the *Chemist and Druggist*, gives details for producing an essence for which he claims the following points. It is as strong as possible compatible with its solubility, possesses a fine aroma peculiar to Jamaica ginger, and is perfectly free from capsicum. Shake together ginger in coarse powder 1½ pounds, and alcohol (60 per cent) 2 pints and 5 ounces, water 15 ounces, repeating the shaking frequently during ten days. Then percolate, press, and filter, the product being about 45 ounces. Take 40 fluidounces of this tincture, 40 ounces of water, and mix. Add to it three-quarters of an ounce of phosphate of soda dissolved in 5 ounces of boiling water and allowed to cool. Shake well. Next add one-quarter ounce of fine calcium chloride dissolved in 5 ounces of nearly cold water. Shake well and allow to stand twelve hours and filter. The filtered solution is placed in a still and distilled at a very low temperature, reserving the first 30 ounces for further use. Distill a further quantity of 40 fluidounces, and allow the still to cool. The residue in the still, which will be about 18 fluidounces, is what is required, and is gotten out by rinsing the still with the 30 ounces first reserved. Filter once more through double paper. The product is 40 fluidounces of a fine amber-colored essence, almost entirely soluble in water.

Carter's Little Liver Pills.—Weight of twelve pills about 7½ grains, of which probably 2 to 2½ grains is sugar-coating. They contain podophyllin and aloes, made into a pill and coated with sugar. On the above we deduce the following formula as closely resembling the original:

Podophyllin	½ grs.
Aloes, Socotrine	8½ "
Mucilage of Acacia	q. s.

Mix, divide into twelve pills, and coat with sugar.—*The New Idea.*

Honey of Roses.—E. Daenen, of Brussels, gives the following method for preparing a bright rose-colored, transparent, and delightfully odorous preparation :

Infuse 100 Gm. of bruised red-rose petals with 400 C.c. of boiling distilled water for six hours, strain, again infuse for six hours in 200 C.c. of boiling distilled water, and repeat, if necessary, with another 200 C.c. Mix the infusions and evaporate to 170 Gm., filter, and in the filtrate dissolve 500 Gm. of clarified honey and 330 Gm. of white sugar.

Japanese Paper as a Container for Medicine.—Dr. A. Hoffmann has added another to the methods at present in vogue for taking powders, such as wafers, tablets, capsules; he recommends Japanese vegetable paper, in which the powder is wrapped and the whole swallowed. The source of the paper, according to Uloth, is *Wickstrœmia canescens*, of the natural order Thymelaceæ, and the product is known in commerce as Usego. Hoffmann states the advantages of the material to be cheapness and easy digestibility.

[One of us has for many years resorted to the use of the thin tissue paper used between visiting cards as a container for administering bad-tasting medicines. Like the Japanese paper referred to, it is of vegetable fibre, and quickly disintegrates in the presence of fluids in the stomach.—Ed. Am. Drugg.]

Compound Cathartic Pills.—Prof. W. M. Searby, of the California College of Pharmacy, complains that the compound cathartic pill, U. S. Ph., gripes very much, and this he attributes to the jalap not being sufficiently finely divided. To remedy this he suggests the addition of a little soap, which not only tends to divide the very active matters, but also assists in their solution when introduced into the stomach. It also gives to the mass a plastic consistence, so that the pills are easily made to retain their form. Pills made according to the following formula act pleasantly, quickly, and effectively, without any griping whatever:

	Grains.
Compound Extract of Colocynth	130
Resin of Jalap	18
Calomel	100
Gamboge, in fine powder	25
Castile Soap, in powder	50
Water	6
Total	329

To make one hundred pills.

The pills thus made weigh 3¼ grains, which is a trifle less than the pills of the Pharmacopœia of 1880.—*Proceed. Cal. Pharm. Soc.* and *Chem. and Drugg.*

Gurjun Oil as an Expectorant.—Dr. William Murrell, of London, England, has been trying gurjun balsam as an expectorant in cases of chronic bronchitis, and writes to the *Lancet* of May 3d that he has thus found 2 drachms of the balsam in an ounce of extract of malt, given three times a day, to be the best form for using it. Compared with balsam of copaiba, it seems less apt to disturb the digestive organs and skin, and patients who had taken both spoke commendatorily of the former as clearing the chest and easing the cough.

The gullibility of our English cousins is a perpetual source of wonder to Americans, just as the propensity of the latter to practical joking is a perpetual snare and delusion to the average Englishman. Where on earth but in England could so manifest a lie as the following (which we copy from the *Monthly Magazine of Pharmacy*) receive credence? "The turpentine crop is likely to suffer in the United States for the want of axes. The great axe factories were destroyed last year by the floods, so that the turpentine farmers of the Southern States cannot get axes enough to supply the workmen." One single factory in Hartford, Conn., or Providence, R. I., turns out enough axes every week to put a new one into the hands of every turpentine "boxer" in the United States.—*Western Druggist.*

A Valuable Remedy for Brain Workers.—We have received several inquiries concerning a much-advertised secret remedy which has found great favor among the clergy in the West, possibly because they have a percentage on all the custom which they can bring to the "professor." The remedy is sent, on the receipt of a pledge of secrecy, to any one for the trifling sum of $10, $6 of which is given to the clergyman who secures the order. Sometimes it is the clergyman himself who is sold. A correspondent of the *Medical Standard* says that the remedy is nothing more or less than a daily enema of two gallons of water, "persistence in which," the accompanying pamphlet says, "will remove the microbes of the intestinal tract from the stomach down."

Orthine is a new candidate for favor as an antipyretic. It is a derivative of phenylhydrazin, obtained by the combination of hydrazin with paraoxybenzoic acid. In doses of 30 to 50 C.c. it has been found an active agent in pneumonia, articular rheumatism, and typhoid fever; but its action is uncertain, and its disadvantages are serious when compared with the slight advantages it may possess.

Mr. C. F. W. Meister, one of the original founders of the Höchst factory, has just retired from the active partnership on the ground of advanced age. At his retirement he placed the sum of 100,000 marks at the disposal of the board of directors for the purpose of establishing a home for old workmen of the factory.

Paraffin, when treated with solvents, behaves like a colloid. It yields jellies with benzol, chloroform, and especially with ether. In acetic acid it behaves like a crystalloid. The condition of paraffin in crude petroleum may thus be explained.—B. Pawlewski, in *Ber. d. Chem. Ges.*, xxiii., 327.

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EDITORIAL.

A VERY instructive case—instructive for those who advocate *general* standardization of pharmaceutical preparations, without being aware of the difficulties in the way—has recently occurred in Germany.

The police authorities of Berlin some time ago procured samples of a liquid and of pills (Liqueur de Laville; Laville's Pills) which were sold as nostrums for gout, with a view of ascertaining whether they contained any ingredient the dispensation of which was forbidden except on a physician's prescription, and also whether the price asked for the articles exceeded the legal rate established for medicines. The expert who analyzed the preparation —Dr. Bischoff—declared that the pills consisted of a vegetable powder, with silicate of soda, and a bitter vegetable extract, possibly containing extract of alkekengi, and probably extract of colocynth. The liquor, the composition of which was given in an accompanying pamphlet, was found not to correspond to this at all, but to contain *colchicine* as active constituent.

In consequence of this report the police ordered the manufacturer to furnish the exact formula by which the preparations were made. For the solution the following ingredients were given: Active principles of convallaria, Fraxinus excelsior, gentian, squill; quinine, cinchonine, calcium chloride; sodium phosphate; alcohol, wine, water. And for the pills: "Active principle of alkekengi"; sodium silicate; sodium carbonate; powd. Teucrium Chamædrys.

Dr. Bischoff now repeated his analysis, and reasserted the presence of colchicine in the liquid, stating that it corresponded in quantity to that contained in wine of colchicum. This time he also found traces of cinchona alkaloids, which had been overlooked in the first analysis owing to the smallness of the sample examined.

On the strength of this report the police authorities preferred charges against the manufacturer and seller before the criminal court. The accused had secured the services of Dr. Friedlaender as chemical expert, who testified that both preparations were made in accordance with the formulæ furnished by the manufacturer. The liquor was found by him to "*contain a body giving reactions similar to colchicine, without its being capable of being exactly identified with this alkaloid.*"

Owing to the discrepancy between the two experts, the case was referred to the Medicinal-Kollegium (Medical Council), which, unfortunately, did not possess among its number any analyst of recognized authority. Nevertheless it rendered a decision, stating among other things that the "liquor contains colchicine."

The case being closed, the accused was condemned to imprisonment for six weeks, but immediately appealed against this sentence, and succeeded in having the investigation of the two preparations referred to the official chemists, Dr. Bein and Dr. Jeserich. These experts made a most exhaustive report, from which we translate (in abstract after *Pharm. Zeitung*) the following passages particularly bearing upon the features interesting us here:

"The liquor contains a substance giving the reactions of colchicine; but the actual presence of the latter is not demonstrated thereby with full certainty."

"Glucoside bodies are present."

"The composition alleged by the formula furnished cannot at this time be completely confirmed, and still less disproved. The present state of science renders the quantitative determination of its constituents as yet impracticable."

The above passages are from Dr. Bein's report. From Dr. Jeserich's we take the following:

"The reactions which in other cases undoubtedly demonstrate the presence of colchicine, cannot be used in the present case as a scientific, absolute, and undoubted proof of the presence of colchicine, for the reason that certain other bodies are present which, as has been shown by careful experiments, yield reactions exactly identical with those afforded by colchicine. It has been demonstrated that these reactions even appear when the acidulated solution had been shaken out with chloroform. Moreover, in this case nitric acid produces a magnificent reaction of scillitoxin, while the same reaction is scarcely visible when applied to the pure scillitoxin of commerce. And this very reaction is at the same time the most delicate one for colchicine. Therefore, since every reaction which is characteristic for colchicine may, in the present case, be due to other substances, the presence of colchicine is not established with scientific accuracy. On the other hand, it is equally impossible to prove that the substances named by the manufacturer are absent, since a mixture purposely prepared according to the furnished formula completely corresponds in its reactions with the purchased sample," etc.

There being so much discrepancy among the various experts, the matter was at last referred by the government to Prof. Liebreich, who reported that the liquor did contain colchicine, but also stated that the composition of such a complex mixture is not amenable to a complete qualitative or quantitative chemical analysis.

This case is of special interest, since it demonstrates that even a well-defined alkaloid such as colchicine, the identification and estimation of which, in a preparation *known* to be derived from colchicum *alone*, present no difficulty, becomes an object of doubt and uncertainty when present or suspected to be present in compounds or preparations of unknown origin.

THE classical researches of Emil Fischer, on the chemical constitution of the various sugars and their relation to each other, have already led to very important results. It has been demonstrated that the various sugars may all be artificially prepared from glycerin, which itself may be built up from the elements. Hence the synthetic preparation of the sugars is an accomplished fact. Of course, the way by which this is accomplished at present is an exceedingly tedious and expensive one, and it is questionable whether any practical use will ever be made of it, that is, so far as to make sugar from glycerin.

But there is a problem, intimately connected with this field of chemistry, which will surely be solved one day, perhaps before the new century arrives, and that is, *the conversion of glucose into sucrose*, or cane sugar.

The accomplishment of this chemical feat will revolutionize the national economy of many countries. It will utterly cut away the bottom from all laws or acts placing a tariff, either as export or import duties, upon cane sugar, and will completely change the conditions of planting, crops, and living of the sugar-raising districts.

Cane sugar ($C_{12}H_{22}O_{11}$), as is well known, may be converted—or, as it is called technically, *inverted*—by very simple means; for instance, by boiling with a dilute acid

it is converted into a mixture of equal parts of *dextrose* or *glucose* (turning the polarized ray to the right), and *levulose* or *fruit sugar* (turning the polarized ray to the left). The change is accompanied merely by the cane sugar taking up one molecule of water and then splitting up:

$$\underset{\text{cane sugar}}{C_{12}H_{22}O_{11}} + \underset{\text{water}}{H_2O} = \underset{\text{dextrose}}{C_6H_{12}O_6} + \underset{\text{levulose}}{C_6H_{12}O_6}$$

The optical antagony between the two derivatives is not equal; while dextrose polarizes 56° to the right at all temperatures, levulose polarizes at 106° to the left at 14° C., the angle diminishing as the temperature rises.

Without entering into speculations regarding the cause of the latter phenomenon, it may nevertheless be stated that modern chemical views incline to a conception according to which the stereochemical molecules of two chemical compounds polarizing in opposite directions, and both representing the original component parts of another definite chemical compound, differ merely by inverted form, so that one may be regarded as the reflected image of the other. Cane sugar, as is well known, belongs to the monoclinic system of crystals, having the form of oblique rectangular prisms. Let us imagine such a prism to be split in two by a section through its opposite long edges. We will obtain two semi-prisms of exactly opposite configuration. By placing them upon each other by their cut surfaces, superimposed in the same position in which the pieces were before cutting, the original form will be reproduced. But in any other position this will not be the case. Thus it may be imagined that the inversion of cane sugar, besides making a slight change in the molecule (from $C_{12}H_{22}O_{11}$ to $C_{12}H_{24}O_{12}$ or $2C_6H_{12}O_6$), also splits the original prism into two semi-prisms (to use this term here). Now, since the problem of recombining certain other optically opposite but mutually related compounds has been successfully accomplished—for instance, dextro- and lævo-tartaric to racemic acid, etc.—it is expected that the recomposition of glucose and levulose into cane sugar will eventually be accomplished. This would, however, not be of great practical importance, unless there were opened up natural sources of levulose more abundant than those now available.

The successful accomplishment of the problem of converting glucose into cane sugar would bestow upon the discoverer—or, at least, upon the patentee, who often reaps the benefit in place of the former—untold riches, and would effectually and permanently wipe out the Sugar Trust.

Supplement to the British Pharmacopœia.—Some time ago the Pharmacopœia Committee of the British Medical Council requested the twenty medical bodies represented in the Council to make suggestions of such of the newer remedies as appeared to them of sufficient merit to deserve insertion in a contemplated "Addendum" to the British Pharmacopœia. From twelve of the aforesaid bodies replies were received. It is hinted by some of our correspondents, and it seems by no means without reason, that these bodies, or at least their representatives who furnished the replies, are not altogether of sufficient standing or authority to be recognized as the official mouthpieces of the medical profession of Great Britain. However, we are not competent judges of this fact, and merely state what has come to us from a very reliable source. Altogether 130 new drugs and preparations were recommended by the contributors. Among these we find articles which are either entirely proprietary (such as creolin, ichthyol) or at least controlled by and exclusively produced under patents. Some of them will recall to the memory of many of our readers certain legal proceedings of recent date—for instance, "Caffeinæ Hydrobromas granulatus."

The Pharmacopœia Committee finally selected the following thirty-seven medicines and compounds, regarding which the assistance of the Pharmaceutical Society has been recently invoked by the Council, with a view of properly defining and preparing them:

Acetum Ipecacuanhæ, Adeps Lanæ (lanolin), Emplastrum Menthol, Eucalypti Gummi, Euonymus atropurpureus (a preparation of), Extractum Hamamelidis liquidum, Extractum Hydrastis liquidum, Ferri Subchloridum (preparations of), Hamamelis Virginica, Homatropinæ Hydrobromas, Hydrastis Canadensis, Liquor Cocainæ Hydrochloratis, Liquor Morphinæ Sulphatis, Liquor Trinitrinæ (sol. of nitroglycerin), Magnesii Sulphas effervescens, Mistura Olei Ricini, Oleum Cadinum, Paraldehydum, *Phenylon* (a name devised by Prof. Attfield, we believe, for "antipyrin"), Pilula Ferri (Blaud), Picrotoxinum, Saccharinum, Sodii Benzoas, Sodii Nitris, Sodii Phosphas effervescens, Sodii Sulphas effervescens, Stramonii Folia, Strophanthi Hispidi Semina, Sulphonal, Suppositoria Glycerini, Tinct. Hamamelidis, Tinct. Hydrastis, Tinct. Strophanthi, Trochisci Sulphuris, Unguentum Conii, Ung. Hamamelidis.

No More International Pharmaceutical Congresses.—The Italian Committee having in charge the preliminary arrangements for the International Pharmaceutical Congress, which was to have assembled at Milan in 1888, but which had been postponed to 1889, and then again to the present year, have announced that the responses to their invitation to participate in the Congress have been too inadequate and discouraging to warrant their issuing the final call. They have, therefore, decided to abandon the project entirely.

Most likely this will be the end of these congresses. Originally they were started by enthusiastic champions of international uniformity in medicine and pharmaceutical standards. Much time and labor were consumed over the preparation of an international pharmacopœia, which even culminated in the presentation of a draft of such a work by A. v. Waldheim, of Vienna. But no attention whatever was subsequently paid to this draft by any pharmacopœia committee here or in Europe, and it is pretty certain that the same fate would befall any other draft gotten up in any one place or locality without consultation of the representatives of other countries.

Influence of Improved Manufacturing Methods upon the Intelligence of Workmen.

As an interesting proof of the fact that workmen, even of the ordinary, often illiterate type, will advance in intelligence and reasoning powers with the introduction of improved methods and apparatus in manufacturing, the *Chemist and Druggist* makes the following remarks in an editorial of May 24th:

It is extremely interesting to note the influence which is produced on the work-people by the introduction of more refined methods of manufacture. This development of skill on the part of the ordinary workman is shown in marked degree in the Chance-Claus method of sulphur recovery from the tank waste. In one of the works where this is carried on there are 4 sets of 7 carbonators, 28 in all, connected by series of pipes provided with cocks for directing the passage of the gases, which take part in the operations, in or out of the several vessels. Arranged in a single building, and connected with these carbonating vessels, there may be counted no less than 204 cocks. The correct position of each one of these is essential to the continuance of the operations: any misplacement would cause complete confusion. Yet such is the developing power of these advanced methods of manufacture that it has been found possible in the various works to select from among the ranks of the ordinary workmen those who can be trusted to control this complicated apparatus. Moreover, the man in charge ascertains at intervals the quality of the gases which pass through the vessels under his care, by withdrawing a sample, and with graduated tube and absorbing solution ascertaining, by process of gas analysis, the amount of active gas in the mixture with which he is dealing. Thus the man is raised from the mere toiler, valuable mainly in proportion to his strength of muscle, to a skilled artisan, where his powers of thought and judgment are brought into play as well as those of hand and arm.

New Specific-Gravity Table of Sulphuric Acid.

G. LUNGE and M. ISLER have made a new and careful determination of the specific gravities of various strengths of sulphuric acid, and have published an elaborate table (in *Zeitsch. f. angew. Chem.*, 1890, 133) giving the corresponding values of density (true specific gravity, Beaumé and Twaddell) percentage by weight and volume. The authors are certain that Kolb—whose table has up to the present time been considered the most reliable—has made numerous experimental errors, particularly in the most dilute acid.

So far as an acid of specific gravity 1.840 is concerned, the new table comes very near the percentage 96, which has been set equivalent to the former. According to Lunge and Isler the true percentage at a specific gravity of 1.840 is 95.6, and corresponds to 65.9° Beaumé, or 168° Twaddell. The specific gravity is understood to be taken at 15° C., compared with water at 4° C.

Diluted sulphuric acid, U. S. Ph., contains 10% of absolute acid. The U. S. Ph. gives the specific gravity as "1.067 (nearly)." The new table has the values:

$$1.065 = 9.47\%$$
$$1.070 = 10.19\%$$

from which, by interpolation, we find

$$1.06826 = 10\%$$

Recent investigation has shown that the people of Great Britain swallow over 5,500,000 pills daily, or one pill a week for every person in the population. The pill consumption for one year would weigh 170 tons, and would fill thirty-six freight cars.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 2,458.—**Patent Rights in Bolivia** (M. P. & Co.).
We are not sufficiently posted on the patent laws of the different countries to give expert advice. You will have to consult a professional patent lawyer. This much we may say, that a Bolivian patent costs about $330, and runs for a period not exceeding ten years, the time depending upon the pleasure of the government.

No. 2,459.—**Ozonized Ether** (Munro).
Ether is known to be a good solvent of ozone. It may even extract the latter from its aqueous solution. Ozonized ether is sometimes used as an agent for bleaching, when fatty substances are to be extracted at the same time; but care must be taken lest it be too strong or act too long. It may be prepared as follows:

Barium Peroxide	1 part.
Hydrochloric Acid	2 parts.
Ether, stronger	50 "
Distilled Water	8 "

Place the peroxide of barium, in small pieces or powder, into a flask standing in cold water, pour in the ether, and very gradually add, under constant agitation, a previously prepared mixture of the acid and water, the flask being carefully corked to avoid loss. After one hour pour off the ethereal liquid and keep it in a cool and dark place in well-stoppered bottles.

No. 2,460.—**Pure Salicylic Acid** (W. O. S.).
There is no difficulty in obtaining absolutely pure salicylic acid; only you must not expect to purchase it at the same price as the ordinary kind. If you do not want to go as far as using the natural acid from oil of wintergreen—which is, indeed, advocated as the sole admissible one, as an internal medicine, by several authorities—you may at least procure the recrystallized, or *dialyzed*, salicylic acid, costing about one-third more than the common. The latter has long been known to contain small proportions of other substances. Some of these are left behind when the acid is sublimed. B. Fischer and others have recently found impurities not heretofore observed—for instance, from 0.5 to 1 per cent of creosotic acids. These are now being removed as far as practicable even from the ordinary commercial acid.

No. 2,461.—**Solution of Albuminate of Iron** (N. S.).
A number of formulæ have been recommended for this preparation. One of the least complicated is the following, which yields a *neutral* solution:

Egg Albumen, dry	1 part.
Solution of Oxychloride of Iron (Dialyzed Iron) Pharm. Germ. [= 3.5% Fe]	12 parts.
Alcohol	8 "
Distilled Water	75 "
Cinnamon Water	enough to make 100 "

Dissolve the egg albumen in 35 parts of the distilled water and filter the solution. [If fresh egg albumen is to be used, take 7 parts of this, shake it with 29 parts of distilled water, and filter through absorbent cotton.] Mix the dialyzed iron with 40 parts of distilled water, add it to the albumen solution, and heat the mixture on a water-bath, during one hour, at a temperature of 176° to 190° F. Then allow it to cool, add the alcohol, and lastly enough cinnamon water to make 100 parts.
The product is a reddish-brown liquid, appearing clear by transmitted, turbid by reflected light. Every 100 parts contain 0.41 parts of metallic iron.
This solution may be mixed with alcohol in all proportions without throwing down a precipitate. It also remains unchanged when heated. Ammonia produces a precipitate soluble in an excess. Acids cause precipitation.

No. 2,462.—**Syrup of Ammonium Chloride** (J. C. McC.).
This preparation is usually made after the following formula (according to report of National Formulary Committee, Proceed. Am. Pharm. Assoc., vol. 34):

Chloride of Ammonium	2½ tr. oz.
Sugar	10 " "
Water	to make 16 fl. oz.

Dissolve the chloride of ammonium in 8 fl. oz. of water; add the sugar and enough water so that when the sugar is dissolved by agitation the product will measure 16 fl. oz.

No. 2,463.—**Reactions and Constituents of Animal Saliva** (Cincinnati).
Normal saliva, of man as well as all warm-blooded animals, has an alkaline reaction, at least while secreted during mastication and during the first hours of digestion. By being kept in the mouth, especially in presence of carious teeth, it may assume an acid reaction. This also happens in certain diseases.
The most important constituent of the saliva is diastase. This is a generic name applied to certain ferments which are capable of converting starch, in presence of water, into dextrin and glucose or maltose. This ferment appears to be an albuminoid, but has never yet been isolated. It may be detected in the saliva in the following manner:
Collect about 5 C.c. of saliva (the mouth having previously been well rinsed with water), put it into a test tube together with 50 C.c. of solution of starch (1 in 100), and place the tube into a warm air-bath kept at a temperature of 38° to 41° C. The presence of dextrin and sugar will be revealed by appropriate tests after a short time, and the progressive ratio of saccharification can be estimated by means of Fehling's solution, although this does not convey any idea as to the amount of the ferment present. Indeed, it is very likely that the ferment is not altogether, or perhaps not at all, used up by the process of saccharification.
Another constituent of saliva, which, however, is sometimes absent, is nitrous acid combined with alkalies.
Its presence is detected by acidulating a little saliva, in a test tube, with sulphuric acid, and then adding solution of starch and iodide of potassium. If nitrous acid or a nitrite is present, iodine will be liberated and blue iodide of starch formed. Or saliva is diluted with 5 volumes of water, acidulated with a few drops of sulphuric acid, and mixed with a little metadiamidobenzol (also called phenylendiamine, $C_6H_8N_2$, melting at 63° C.). If nitrites are present, the liquid turns more or less intensely yellow, the color arising from the formation of triamidoazobenzol:

$2C_6H_8O_2$	+	HNO_2	=	$C_{12}H_{13}N_5$	+	H_2O
phenylen-diamine.		nitrous acid.		triamido-azobenzol.		water.

No. 2,464.—**Ice Machine** (Texas).
These machines for the artificial preparation of ice are so little used in this region that we are not able to answer your question as clearly as we would like. If you can inform us of some one who is the agent for the machine in this country, it would be easier to get the information. It is probable that the sulphuric acid has become so saturated with moisture that it has lost its power to absorb more. In an article by C. H. Peabody in the *Technological Quarterly* for May, 1889, it is stated that the sulphuric acid should be concentrated. We do not see how the addition of lime could be of any assistance if it is to come into contact with the acid.

Formulæ asked for:

1. Paine's Celery Compound.
2. Bush's Bovinine.
3. S. S. S.—Swift's Specific.
4. Greene's Nervura Nerve Tonic.

BIBLIOGRAPHY.

A NEW MEDICAL DICTIONARY: Including all the Words and Phrases used in Medicine, with their Proper Pronunciation and Definitions, Based on Recent Medical Literature. By GEORGE M. GOULD, B.A., M.D., Ophthalmic Surgeon to the Philadelphia Hospital, and Clinical Chief, Ophthalmological Department, German Hospital. With elaborate Tables of the Bacilli, Micrococci, Leucomaïnes, Ptomaïnes, etc.; of the Arteries, Ganglia, Muscles, Nerves, and Plexuses; of Weights and Measures, Thermometers, etc.; and Appendices containing Classified Tables, with Analyses, of the Waters of the Mineral Springs of the U. S., and Tables of Vital Statistics. Philadelphia: P. Blakiston, Son & Co., 1890, page 519, 8vo, half-roan.

THE title would have been improved by reading: "Including all the words and phrases *commonly* used," etc., for the work is not by any means a complete glossary of medical terms. It has the merit, however, of including a very large proportion of the words and terms which have been introduced during the past ten years, and of being of convenient size, well arranged, and quite as comprehensive as the needs of the majority of students and physicians demand. By an arrangement of sub-titles much space has been gained without much increase of labor required for reference. The incorporation of numerous titles of tests, solutions, instruments, etc., not heretofore found in medical dictionaries, is a feature worthy of especial notice.